

# THE IRON AGE

New York, April 3, 1919

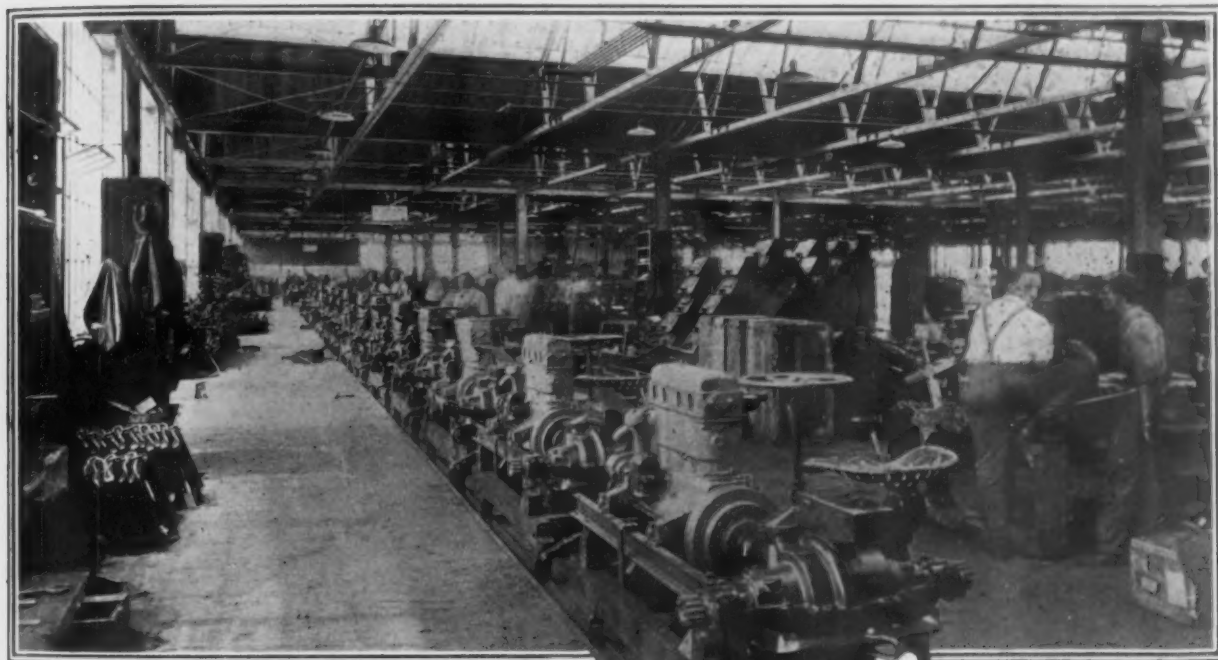
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## Shop Routing System Reduces Handling Costs

Parts Progressively Assembled at Cleveland Tractor Plant, Thus to Reduce Storage of Parts and Storage Space

BY F. L. PRENTISS



**F**OLLOWING the recent completion of large extensions to the plant of the Cleveland Tractor Co., Cleveland, radical changes were made in the company's production methods with a view of reducing to a minimum the handling of raw material and finished parts and eliminating the necessity of a large amount of storage space that would otherwise be required.

The plant has a daily capacity of 50 tractors of the caterpillar type, but by its method of routing and progressive assembling, practically no finished parts are kept in the stock room. Practically the entire machine is made in the plant except the motors, differential gears and roller bearings. Both the larger and smaller parts follow the routing directly from the raw stock room through the various operations to the final assembly floor and the various production departments keep only one day ahead of the final operation except in the case of some of the smaller pieces of which there is usually a supply on the floors sufficient for two or three days' tractor output. However, most parts are machined and inspected one day and used the next.

A progressive plan of assembly is followed, all small parts being sub-assembled in stations on the floor where made. These sections are then collected for a larger sub-assembly at a convenient point

on the way to the final assembly floor. Large

castings move in a straight line from the storage yard through the manufacturing building in which they are to be machined, pass through the machine operations, are inspected, washed and painted, if painting is required, and at the end of the bays in which these operations are performed, have reached the final assembly line. These parts in the various operations from rough castings until ready for final assembly, move from the time they are brought in a side door, only through one bay of the shop, a distance of about 175 ft.

The manufacturing departments include a building 60 x 540 ft. used for rough storage, machine operations, sub-assembling, and for tool room purposes, and another building in parallel line 182 x 441 ft., which is occupied by a machine shop and finished assembly and testing departments. The former building is devoted to the machining and sub-assembling of the smaller parts. The heavier

The Assembling Line at One Side of the Main Shop. Parts that make up the tractor are machined and in some cases sub-assembled in the transverse bays, moving across the floor until they reach this line at the point needed for final assembly

parts, including the front and rear wheels, the transmission case and large internal gears for the driving wheels are machined in the building occupied by the final assembling department. The main and side frames are also fabricated in this building. In the rough stock room is kept the supply of smaller castings and bar stock which is brought into the building through an adjoining receiving room. This stock room is at one end of the building and the machine departments adjoining occupy the two bays, one of which is used for machining castings and the other for turning and grinding shafts from the bar stock, for drilling oil holes in the shafts and for grinding pinions. The rough stock is carried on electric trucks, the bar stock, after being sawed to

is made on a store room form, showing the part, number and quantity. These receipts are made out daily as the parts are received, and are sent to the planning department to be used for making a daily report of the floor shortages. Copies of these reports are sent to the various superintendents so that if their departments are short they will increase production to meet the requirements of the daily schedule prepared by the management. This plan avoids the danger of an unbalanced stock. In addition to these reports there is a weekly schedule shortage report which shows each department how many pieces it is behind in production and how many pieces must be turned out daily to eliminate the shortage.



Bay in Which the Frames Are Fabricated and Assembled. The frame, after partial assembly, is suspended from a trolley track on which it is pushed along the line of Bliss riveting machines for the various riveting operations. The complete side frame is made in this bay from blanking the sheet to painting the finished frame. Two men shown at the right are riveting a side frame suspended from the overhead trolley and counterweighted for ease in placing the work on the machine.

length, being conveyed on racks and the castings in sheet metal shop barrels.

In this shop transmission parts, power brackets, steering wheels and gears, brake band ends, clutch rods, clutch rod brackets and foot pedals are made and sub-assembled and the transmission is completed. Bench assembly is done at the lower end of the shop. Completed sections, shafts, screw machine products and other parts made in this shop go to the finished stock room where they are counted and passed directly on to the other shop for final assembly. The only parts that are kept in the finished stock room are such small items as bolts, small gears, roller bearings, screws, lock washers, cups, etc.

The only reason for sending the bulk of the finished single parts and sub-assembly to the stock room is to keep a record of the finished stock. This

The main machine and assembling shop which parallels the one used for smaller machine work is divided transversely into 11 bays. Wheel castings, transmission cases, internal gear blanks and other large castings, as well as material for frames, are received in car lots in the storage yard between the two shops, and each part is unloaded and stored at a point about opposite the section of the shop in which it is to be machined, doors being provided along the side of the building for taking in raw material.

The castings, after being taken in the side doors, move transversely across the building in the various bays provided for machining and sub-assembling, until they reach the opposite side of the shop, where the assembling line is located in the outer bay, extending longitudinally nearly the length of the building. The plant is so arranged that the operations



Rear Driving Wheel Castings. Starting at the Lower End of This Bay, Move Across the Bay from Machine to Machine on the Rack Which is Located Between the Two Rows of Machines on Which the Various Operations Are Performed

in the transverse bays occur in the same order as the final assembling so that the single parts or sub-assemblies reach the assembling line at the point where they are wanted.

In the first bay of the machine shop for large work and assembling the transmission case is machined. The rough castings are brought on trucks from the storage yard directly outside, and as the case passes down the bay it is ground and the 41 holes in the case are drilled in one operation on a

multiple spindle machine, the holes are tapped, the case is partly assembled, bearing caps are put on and the case is bored out for the main driving shaft. The complete case is carried by an air hoist and placed on a rectangular frame for final assembly. The frame or truck is mounted on wheels and moves on a narrow-gage track and parts are added until the tractor is completed and runs under its own power out into the last transverse bay, which is used for testing. Each assembler performs only



A Steel Rack Is Provided for Moving the Large Internal Gears for the Driving Wheel Across the Bay in Which These Gears Are Machined. There are two runways in this rack on each side of which is a row of machines. The two lines of Fellows gear shapers used for cutting the gear teeth are shown



one operation, for which he is allowed a specific amount of time, and there are also fixed periods of time for the various machine operations and sub-assemblies.

In the second bay the differential parts are machined and assembled and the differential reaches the lower end of the bay ready to be placed in the transmission case. Motors are stored in the next bay, being lifted into the chassis with a monorail. In the next bay the main and side frames are fabricated. In this bay are a large blanking press and several riveting presses for assembling the frame parts. A trolley track is located above the line of riveting machines, and while a side frame is being riveted, it is suspended from two trolleys on this track by a counter weight. This method of handling makes it easy for a riveter to adjust the frame to the proper position in the press and move it along to the end of the bay when the frame is completed. At the lower end of the bay the frames are washed and painted, and are then ready to be taken to the assembling line adjoining.

In the next bay rear driving wheels go through the various machine operations, starting as rough castings from the outside storage yard. The machines for boring, facing, drilling, tapping and counter boring the wheels are arranged in two rows

with a rack between, along which the wheels are pushed from one machine to another until the operations are completed. From the end of this rack they pass after inspection into a washing machine, after which they are painted. They are then assembled on the opposite side of the bay and are ready to be put in the chassis. In the next bay the internal gears for the driving wheel are bored and faced, then the teeth are cut and the gear is drilled and counter bored. A special rack is provided between the two lines of machines for conveying the part through the bay during the operations. The finished gear is sent to the hardening department, which is located convenient to both machine shops, and on its return is attached to the wheel.

The same progressive method is followed in machining the lower and front wheels in the next bay. These wheels are then assembled to the side frames which in turn are added to the chassis in the assembling line. In the last manufacturing bay the tread or chain is made. This is composed of cast-iron shoes. The rough castings are drilled and fitted with roller bushings and the shoes are then assembled into the chain and mounted on the chassis. Various other parts of the tractor are added as it moves along the assembling line and after the tread is in place.



After Leaving the Assembly Line the Finished Tractor Moves Under Its Own Power to the Test Floor Which Occupies the Two Lower Bays, and After Testing on This Floor Is Ready for Shipment

### A New Steel for Casting Tools

A new development in tool steel is announced by the Kinite Co., Milwaukee. This steel differs from ordinary tool steels in that it is cast directly into the shape of the tool or die desired, and is also said to possess the quality of not changing shape or size during hardening.

The new steel, known as Kinite, is cast in specially prepared molds and has the appearance of a smooth forging.

Unlike most other high speed steels, it contains no tungsten. It is pointed out that it will harden better than many forged products, and when hard is uniform and close grained, is high in heat resisting qualities and does not scale in the fire. It is thus regarded as desirable for milling cutters, dies, taps and other tools having multiple cutting edges.

On the claim that Kinite castings do not change form during the hardening process, it is possible to make them so near the desired shape and size of the finished tool or die that little machining is necessary for completion; also large dies can be made in one single piece instead of many small pieces. Dies requiring

one hole or more are made with cored molds, thus saving material and the labor of working the holes.

The steel is also offered for making machine parts that must resist heat and heavy abrasive action. It is stated that annealing boxes can have much thinner walls when made of this material, and that they retain their shape and original weight through many more firings than when cast or malleable iron is used.

Castings, it is claimed, can be annealed and re-hardened many times without losing any of their properties. After proper annealing they show about No. 38 scleroscope, and at this hardness can be machined at 25 to 30 in. ft. per minute. Kinite anneals and hardens at about the same temperature, 1840 deg. Fahr.

Some idea of the kind of dies that are made with this steel can be gained from the illustration, which shows the rough castings for a large circular die for drawing milk cans. The finished die weighs 141 lb., is 13 in. inside diameter and 4 7/8 in. deep. The mean out-of-round after hardening was 0.003 in., a change so slight that no grinding was required, and as the surface was smooth, showed no scale and was so near the required size it was used for the purpose intended without machining.



# NEVILLE ISLAND PLANS

## Storage Buildings Being Completed—No War Money for Peace Time

WASHINGTON, April 1.—War appropriations will not be used for peace time purposes. This is the reply of the War Department to the report that despite the announcement that the Neville Island project is to be abandoned, construction work is still going on there. It is explained that the work which is now being done at Neville Island is being confined to the completion of storage buildings, and that these structures are to be used solely for the purpose of storing temporarily Government-owned materials which were manufactured under war appropriations and which have not yet been disposed of.

"The War Department has taken the position," said one official, "that it would not be fair to the taxpayers to use wartime appropriations for peace purposes even though it might be done so legally. The Neville Island project was entirely a war program, and Congress appropriated the money to help win the war. We have no right to take for granted that Congress would appropriate the same money for a peace enterprise, or that it would want this money spent for the construction of such a plant for our peace army.

"For that reason, the project has been abandoned. If Congress were to decide that it wanted the plant completed, it could write that decision into its next Army appropriation bill and there would still be time to resume the work. We are going ahead now, however, on the assumption that Congress has no such plan.

"The work which is being done at Neville Island is being confined entirely to the completion of big storage buildings, for Congress certainly intended that the articles which have been manufactured should be properly stored until we could dispose of them. That is clearly within the limits of a war appropriation. But there is no plan to make a permanent storage depot of Neville Island. Congress would have to legislate specifically for that purpose before the War Department could undertake such a project."

### Scrap on Hand

The following statement has been issued by the Director of Sales of the stocks of scrap on hand Feb. 28:

	Pounds
Brass scrap, all kinds.....	5,162,405
Cupro nickel, all kinds.....	700,540
Aluminum scrap, all kinds.....	62,893
Copper scrap, all kinds.....	1,219,218
Machine shop borings and turnings.....	4,640,989
Heavy melting steel scrap.....	1,685,097
Low phosphorus steel scrap.....	6,838,539
Nickel steel borings and turnings.....	2,887,779
Nickel steel scrap (heavy).....	5,692,345
Cast and malleable iron scrap.....	1,042,097
High speed steel scrap and borings and turnings.....	148,453
Babbitt.....	228,428
Mixed and miscellaneous iron and steel scrap.....	1,119,260
Brass sweepings, ashes, etc.....	265,119
Lead scrap, all kinds.....	94,005
Chemicals, acids, etc.....	3,594,795
Miscellaneous scrap (rags, paper, wood, etc.).....	535,949
Burlap.....	33,098
Total.....	35,948,009

### Recent Sales

The office of the Director of Sales also issued an interesting compilation of the sales reported from March 8 to March 14 inclusive. Owing to the work necessary to compile reports from the various offices throughout the country, these figures are always several weeks late. The list totaled \$42,499,827, and included the following items:

Airplanes.....	\$319,000.00
Airplane equipment.....	679,887.00
Building utilities.....	25,098.52
Miscellaneous building material.....	95,035.39
Ferrous metal, including scrap.....	71,977.96
Non-ferrous metals, including scrap.....	234,591.83
Fuels.....	314,728.40
Hardware.....	7,876.08
Machinery, machine tools and engineer equipment.....	224,824.85
Motors and vehicle equipment.....	666.44
Motor vehicle accessories.....	281.66
Railway material.....	1,835.54
Trucks and trailers.....	450.00

As a reply to the continued reports of the sale of automobiles and auto trucks at great reductions in the

manufacturers' prices, the Director of Sales called particular attention to the fact that the list contained no mention of automobiles or trucks. The item of "trucks and trailers, \$450," was a sale of kitchen trailers.

The War Department also issued a detailed statement of the \$480,000,000 worth of contracts for the air service which were canceled or suspended as a result of the termination of hostilities. These included the following:

	Value
Engines and spare parts.....	\$250,409,982
Airplanes and spare parts.....	167,554,386
Chemicals and chemical plants.....	19,852,370
Instruments and accessories.....	13,832,902
Balloons and supplies.....	10,071,035
Fabrics, lumber and metals.....	7,968,324
Miscellaneous.....	11,041,132
Total.....	\$480,730,131

At the same time, the department announced that out of a total of 3227 De Haviland-4 airplanes produced at the time of the signing of the armistice, 1885 had been shipped to Europe, 1185 had arrived at French ports, 1025 had been assembled overseas, and 984 had been put into service overseas. Of these, 628 had actually reached the front, and 457, or 14 per cent of the total produced, were actually in commission at the front.

The disposition of ordnance scrap is proceeding slowly. The department officials believe, however, that all its stock of scrap should be gone before the end of May. All scrap is being sold at current market prices.

## FOUNDRYMEN AT PHILADELPHIA

### Convention and Exhibit of Equipment in the Week of Sept. 29

Secretary C. E. Hoyt, of the American Foundrymen's Association, 111 West Monroe Street, Chicago, announces that Philadelphia, the birthplace of the association, has been selected as the place of the 1919 convention and exhibit, which will be in the week of Sept. 29. The organization meeting was held in Philadelphia in June, 1896, and in 1907 Philadelphia again entertained the foundrymen of the country in their annual convention, this being the first convention in which any considerable exhibit of foundry equipment was made.

Much of interest to foundrymen has developed in the Philadelphia district in the 12 years since the last meeting there, including the great shipyard at Hog Island, the new foundries at the League Island Navy Yard and the foundries of the Westinghouse company at Essington.

Of special significance in connection with the next convention is the plan of the officers of the association for an international meeting. Invitations will be extended to foundrymen and industrial engineers in England, France, Belgium, Italy and other European countries, as well as in South America and Australia, to come to Philadelphia in September. The fourteenth annual foundry exhibit will be held in the week of the Philadelphia convention in exhibition hall of the Philadelphia Commercial Museum. This building is located on the Schuylkill River in West Philadelphia at Thirty-fourth Street below Spruce, only five blocks from the West Philadelphia yards of the Pennsylvania Railroad. The building has a private Pennsylvania Railroad siding for unloading carload shipments. The exhibition hall will be the largest ever occupied by the display of foundry equipment, having 88,000 sq. ft. all in one room on the ground floor. The floor is of cement. The fact that foundrymen and industrial engineers from other countries are expected at Philadelphia gives the meeting an unusual distinction and the expectations are that the exhibits will be more numerous and more representative than at any previous meeting. The program of papers for the session of the American Foundrymen's Association is expected to measure up to the past standards of the association.

The Indiana Die Casting Co., Indianapolis, has opened an office in the Tribune Building, New York, in charge of the Vitus F. di Lustro Corporation.

## EXPORTS INCREASE

### Records Being Made as Restrictions Against Trade Are Taken Off

WASHINGTON, April 1.—The question of war blockades is still a dominant feature of the extension of our export business. The fact that the outgo of American products reached a record breaking total of \$21,000,000 a day in February, despite the difficulties of European commerce, promises the breaking of further records when these restrictions are removed.

Although these restraints bar access to more than half of the territory of Europe, the February exports to that grand division totalled \$376,963,677 against \$259,017,224 in February, 1918.

A year ago, of course, the restrictions were even greater. For instance, we exported nothing in February, 1918, either to the Netherlands or to Sweden. In February, 1919, the Netherlands alone received \$11,953,285, and Sweden \$2,462,201. Belgium increased from \$7,965,284 to \$27,967,597; Denmark from \$146,000 to \$9,022,069; Norway from \$675,114 to \$6,359,405 and Spain from \$1,591,061 to \$7,028,169.

The exports to France increased from \$55,410,388 in February, 1918, to \$93,007,208, and those to the United Kingdom from \$151,275,171 to \$165,875,623. Only Italy remained stationary—\$38,218,836 in February, 1918, and \$38,185,488 in February, 1919. To Russia we exported \$12,024 in February, 1918, and nothing in February of this year.

The February exports to Australia and New Zealand increased from \$3,829,095 in 1918 to \$15,601,820 in 1919; to the Philippine Islands from \$2,264,913 to \$6,761,366; to Brazil from \$2,493,516 to \$14,438,868, and to Cuba from \$14,336,059 to \$22,702,365.

Considerable progress has been made in the removal of the European blockades. Italy has announced the abandonment of the blockade of the Adriatic coasts; the entente officials in Paris have agreed upon the lifting of the blockade of German Austria, but are still framing rules to prevent re-export to Germany. The question of the lifting of the blockade of Germany is still being pressed at Paris. It appears to be doubtful, however, whether this will be done before the general peace treaty has been actually framed.

Another important feature of the export situation is the work being done by the Railroad Administration on reduced export rates for traffic to China, Japan, Australia and Philippine Islands, applying from territory Missouri River and east through Pacific Coast ports. The proposed rates include:

Commodity	Rate per 100 Lb.
Agricultural implements .....	\$1.00
Iron articles (general mixture).....	.60
Car wheels and axles attached.....	.60
Boiler iron .....	.60
Cast-iron pipe .....	.60
Wrought-iron pipe .....	.60
Roofing iron .....	.60
Machinery, including grading and road-making machinery.....	1.00
Sewing machines .....	1.10
Railway equipment (axles, beams, couplers, etc. comb.).....	.75
Railway equipment (cars, passenger and freight).....	.75
Automobiles and parts:	
Passenger .....	3.75
Freight .....	3.00
Iron, pig .....	.55
Iron, castings .....	.70
Plumbers' goods .....	1.50
Wire rope .....	.70
Scrap .....	1.00
Spelter .....	.75
Steam and hot-water heating apparatus.....	1.25
Zinc plates and sheets.....	.80
Vehicles .....	1.40

### Coke Producers' Association Revived

UNIONTOWN, PA., April 1.—Necessity for a single directing agency to define policies affecting the Connellsville coke region during the readjustment period has resulted in the calling into action of the Coke Producers' Association, an organization of 30 prominent independent or merchant operators, which some years ago acted as the spokesman of the region, but was inactive during the war, many of its members being aligned with the Fuel Administration. The Coke Producers' Association was called back to life again at a

conference and banquet of members at the Uniontown Country Club, and general trade problems considered, but no specific action was taken other than a very definite expression of how each should proceed to command the best hearing for Connellsville coke.

That wages must remain at their present level at least until a substantial reduction is noted in the cost of living was one of the questions upon which there is no disagreement on the part of any operators. In order to allow the wage scale to remain stationary, the sentiment was strongly expressed that production should be held strictly within demand, so that a firm market will be maintained. Coke operators believe that coke is now at rock bottom, with an average price of \$4.50, ovens.

The officers of the Coke Producers' Association are Harry Whyel, president; James R. Cray, vice-president; G. S. Harah, treasurer, and M. D. Brooke, secretary.

## STEEL MILL EQUIPMENT ABROAD

### Demand Will Come from England Rather Than the Continent

The head of an important engineering company which builds rolling mill machinery in the United States has returned from a tour of several months in Great Britain, France and Belgium, in which he studied conditions as they apply to steel plants and rolling mills, and the results of his observations are of interest. The Belgians are not yet in the market, for much depends upon the indemnity which Germany must pay them, and also upon the length of time which must elapse before such funds are available. France is not in the market for products of American shops, he states, because of the policy of that Government in prohibiting the sending of money out of the country, desiring to give every possible protection to home industries. So far as rolling mill machinery is concerned, the French machine shops are now admirably equipped with the best of American tools, and are in excellent position to produce heavy machinery, possibly on American designs.

The steel makers of Great Britain, this manufacturer learned, are awake to the necessity of modernizing their works. While there are a good many up-to-date plants, others are much below American standards. For example, a Scotch works was visited where open-hearth furnaces are still charged by hand. British steel makers realize that they must improve their methods, seeing that the output per man is considerably below the average in this country. At the same time there are the demands of British iron and steel works labor for higher wages. In view of the open expressions of the manufacturers on the necessity of providing the latest equipment, to meet the new conditions, the call for American machinery in iron and steel works lines is expected to be no inconsiderable factor in the near future.

### Will Increase Output

TORONTO, ONT., April 1.—Regarding the reports of the resumption of work by the Nova Scotia Steel & Coal Co., New Glasgow, N. S., D. H. McDougall, president of the company, states that the two departments of the steel plant at New Glasgow have been working almost continuously, while operations of one rolling mill will be resumed at once and the other mills within 10 days or two weeks. Repairs soon to be completed on the open-hearth furnaces at Sydney mines will permit them to begin to produce steel early in April. The decision to start operations coincides with the reduction of American steel prices, but apparently is not directly connected with that action. The lower prices will, however, help the company.

The shops of the Bessemer & Lake Erie Railroad at Greenville, Pa., will hereafter work only 40 hours per week. All Saturday work will be cut out, except in the round house and power plant.

## WELDING AVOIDS SHUTDOWN

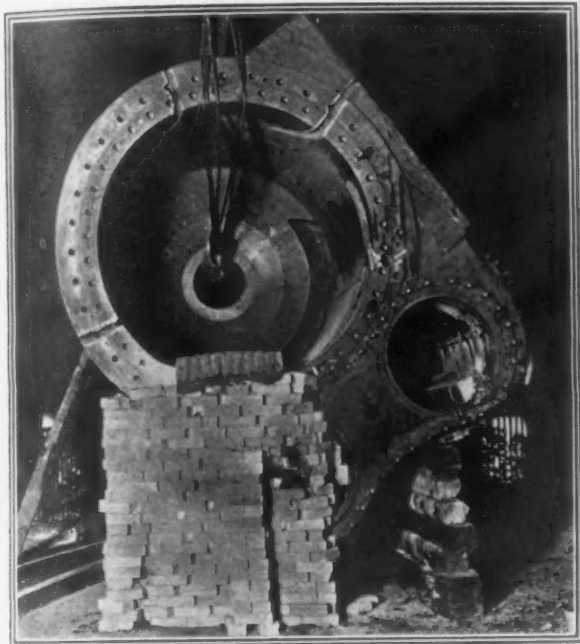
### Cylinders of Large Rolling Mill Engine Repaired by Oxy-Acetylene

BY L. M. MALCHER\*

One of the big steel rolling mill engines of the Carnegie Steel Co. at Farrell, Pa., that had been doing its full share in helping to win the war broke down two weeks after the signing of the armistice. In the accident, besides other parts, the left-hand low pressure steam cylinder, 70 in. inside diameter, of an Allis-Chal-

investigation, decided in favor of oxy-acetylene welding and called upon the job-welding shop of the Oxweld Acetylene Co., Chicago, to meet the emergency. Three expert welders, with all necessary equipment, went immediately to Farrell and completed the repairs to the low-pressure cylinder, including chipping, pre-heating and welding, in 72 hr. While dismantling the engine a fracture was discovered in the right-hand 42-in. high-pressure cylinder. This fracture also was repaired in about 18 hr. It took just seven days, from the time the order was given to the Oxweld Acetylene Co., to complete the entire job.

While welding inside of the cylinder castings the



The Wrecked Low Pressure Cylinder. Cracks V-Grooved by Chipping Preparatory to "Oxwelding." The seven cracks, all at head end, are 1 to 8 ft. in length and 2 1/4 to 3 in. in depth. Each was preheated



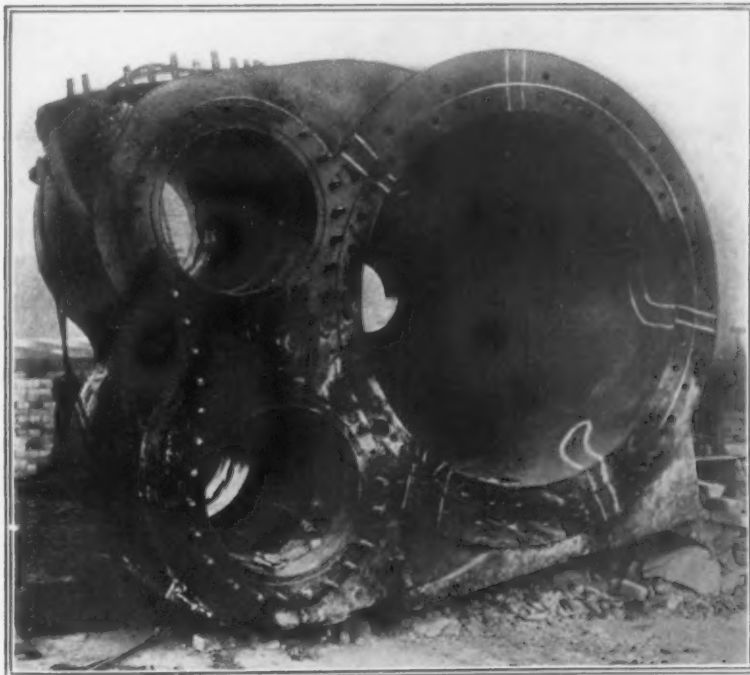
mers twin tandem compound reversing engine was badly fractured as a result of the breaking of a connecting rod at the moment of reversal.

A serious situation confronted the officials of the steel company, as 360 men were thrown out of employment and it would have taken three to three and one-half months to obtain a new cylinder, in case the broken one could not be repaired in a shorter time.

Although considerations of expense as between the cost of purchasing a new cylinder and repairing the old one were of secondary importance, the cost of repairing was estimated to be about one-third that of a new cylinder.

The officials of the Carnegie Steel Co., after careful

\*Superintendent welding shop of Oxweld Acetylene Co., Chicago.



Welding of Low Pressure Cylinder Completed. Preparing and preheating the casting took 27 hr., and the welding 45 hr. The materials consumed were as follows: Linde oxygen, 2850 cu. ft.; Prest-O-Lite acetylene, 2845 cu. ft.; cast iron welding rods, 390 lb.; flux, 25 lb.

by means of a charcoal fire. Asbestos paper was used to protect the workers and retain this heat. Because of the length of the cracks, extra long blow-pipes and rods were required

men relieved one another every 10 min. because of the extreme heat deflected back during the welding operation. On the outside welding, however, the heat was not so intense, and the men relieved one another every 30 min.

After the engine cylinders were machined, it was almost impossible to determine where the cracks occurred.

### "The Physical Examination in the Employment Department"

is the title of a special bulletin issued by the employment management branch, industrial relations division, United States Shipping Board Emergency Fleet Corporation, Philadelphia. Emphasis is placed upon the need for examination at the time of employment, as well as for follow-up systems of medical examining later on. There is shown the blank form for recording the medical statistics of each employee.



# Proper Specifications for Bearing Metals\*

## Functions of a Lining Alloy—Mixing the Component Metals—Electrically Hardened Lead—Solders

—BY ALFRED A. GREENE†—

**T**HERE is only one Babbitt metal, and that is the formula compounded by Isaac Babbitt about 60 years ago for which Congress gave him a gold medal and \$50,000. It is composed of 88.9 per cent of tin, 3.7 per cent of copper and 7.4 per cent of antimony. The fact that Isaac Babbitt died in an insane asylum does not detract from the merits of his formula, because it has been the standard for high-grade anti-friction metal for many years. All other lining alloys have been attempts to improve this formula in its physical characteristics or reduce its price. By custom these formulas have been called Babbitt metals, even though they contain no tin or copper, but, like No. 4 Babbitt, consist of lead and antimony.

### The Work It Does

The function of a Babbitt metal, or to give it its proper name, a lining alloy, is to wear out. Wherever there is friction there is wear, and if the lining alloy does not wear, the shaft will.

What are the physical characteristics of the elements that compose a lining alloy? Let us take genuine Babbitt for our illustration, which, as above stated, is 88.9 per cent tin, 7.4 per cent antimony and 3.7 per cent copper. Tin is a crystalline metal about 9 Brinell hardness. It is very malleable and takes a high polish, but it would be too soft to use as a bearing. The addition of 7 per cent of antimony makes it harder and gives it compressive strength, but also increases its brittleness, so copper must be added to give it toughness, or tensile strength. The addition of 7 per cent of antimony and 4 per cent of copper to 89 per cent tin brings up the Brinell hardness to about 28, or over three times as hard as pure tin.

The mixing of this copper and antimony with the tin is not an easy matter, because tin melts at 453 deg. Fahr., antimony at 786 deg. Fahr., and copper at 1982 deg. Fahr. In order to get the copper and antimony properly introduced to this mass of tin requires an understanding of how to handle these metals at their widely varying temperatures. There is more to it than just putting them all into a pot and melting them. Genuine Babbitt properly made shows a matrix, of tin, and all through the mass are crystals composed of tin, antimony, copper and antimony, and tin and copper. These crystals constitute the bearing points in genuine Babbitt. All other lining alloys of tin, copper, antimony and lead are of the same structure to a more or less extent.

### Use of Lead as an Alloy

While tin and antimony are anti-frictional, yet they are not the best anti-frictional metals. Nature has given us a metal which is oily and greasy and is the best metal for anti-frictional purposes. This metal is lead, but unfortunately pure lead is very soft and by itself has no value as an anti-frictional metal. Unfortunately again, it is very hard to alloy other metals with lead. For instance, and here is a very radical statement, it is impossible to make a true alloy of lead and copper. I fully appreciate the claims that are made for the leaded bronzes, but I have yet to see an alloy of lead and copper, no matter how carefully made, that will stand remelting without segregation. This is because there is no affinity in the metals. A microscopical examination of a lead-copper mixture shows a matrix of copper with little round globules of lead in the holes. On a remelting of this metal the lead sweats out and settles to the bottom. This is what prevents its use as a lining alloy.

Lining alloy manufacturers, recognizing the value of lead as an anti-friction metal, have tried to use as much lead as they could, which has brought about a series of alloys ranging from 92 per cent of tin and no lead, down to 95 per cent of lead and no tin. There are hundreds of branded metals varying from each other a few points in tin, lead, antimony and copper, which have been brought into being in an attempt to meet conditions of service and price.

It is a well-known fact that a purchasing agent can always buy a Babbitt metal at his own price. This can be readily understood when the prices of the metals are taken into consideration. With tin selling at 75c. a lb. and lead at 5c. a lb., it is only necessary to take out 2 per cent of tin and add 2 per cent of lead to make a difference of 1¼c. a lb. and it is almost impossible to tell from examination of the metal that it contains the 2 per cent of lead.

If manufacturers in their desire for business are disposed to be unscrupulous they can always meet the purchasing agent's wish for a price and still make their profit. This may not work any harm from a service standpoint, because it is a fact that in the use of most of the lining alloys there is a great factor of safety, but it is not the proper way to do business.

### Proper Data for Basing Specifications

The proper way to sell Babbitt metals is for the purchasing agent to know his requirements and receive from the engineering department sufficient data as to maximum revolutions per minute, pressures per square inch, method and character of lubrication, and condition of service. This should be put up to the Babbitt metal manufacturers for recommendation as to the proper alloy to be used.

There are four fundamental requisites in a lining alloy, namely, compressive strength, tensile strength, heat resistance and anti-frictional qualities. You may be rather surprised at the order in which I have placed these qualities. You will note that I have placed anti-frictional qualities last. It is generally understood that anti-frictional qualities are the most important, but this is not so. A lining alloy to be of value must have: First, compressive strength, that is, it must be able to hold up the maximum load per square inch that is liable to be put on the bearings without squashing out; second, it must have sufficient tensile strength so that if the bearings are subjected to vibration or pounding, as in explosive engine work, it will not break apart; third, it must have sufficient heat resistance so that should the bearings become hot, the alloy will stand the greatest possible heat before beginning to flow.

Without these three qualities, the quality of anti-friction has no great value. As a matter of fact, under ideal conditions the shaft never touches the Babbitt metal. There is supposed to be a film of oil between the Babbitt metal and the shaft all the time, and this is what the shaft actually rides upon. It is when the oil film is not maintained that the anti-frictional qualities of the metal become of real importance.

Let us take up these four points in their relation to the four metals used in their manufacture, namely, tin, lead, antimony and copper. If compressive strength was all that was needed, we could make a metal composed of 80 per cent lead and 20 per cent antimony, which would be a 32 Brinell, or harder than genuine Babbitt. As far as holding up the load is concerned, this metal would answer every purpose for which a lining alloy could be used. But, as above stated, while antimony will harden lead, when we get beyond a certain percentage the antimony and lead become very brittle, so that 80 per cent lead and 20 per cent anti-

\*From an address before the Purchasing Agents Association of St. Louis, Feb. 18.  
†With the National Lead Co.

mony is almost like glass and the slightest vibration would break it in pieces. Therefore, to combine the qualities of compressive strength with tensile strength, we must add tin to the lead and antimony. Tin has an affinity for lead and we get, with the addition of the tin, hardness, that is compressive strength and elasticity or tensile strength.

It is not sufficient only to get this elasticity, but we must have the metal tough in its elasticity, that is, it must have the greatest amount of resistance in tensile strength before it begins to elongate. Copper is thus added, which, having an affinity for tin, will toughen the tin. The amount of each element that is put into the alloy has a definite relation to the necessary characteristics. To the manufacturer who knows his business these facts are well known, which is why it is profitable for the purchasing agent to take advantage of this knowledge, because the manufacturer may be able to recommend a formula that would mean a considerable saving in money.

For example, you know that genuine Babbitt, which has been the standard for so many years as the best metal that could be produced for the most severe service, has certain physical characteristics. It is 28 Brinell hard and it has an elastic limit of 0.012 at a load of 10,000 lb. per sq. in. It has a tensile strength of about 11,000 lb. per sq. in. Now, if you know that this metal will do your work, that is an established fact. If metal, and they can prove that it has the same physical characteristics, it really makes no difference to you from what the alloy is made, provided it is sold to you at an attractive price.

Genuine Babbitt, as you know, contains 89 per cent of tin and no lead, yet there is a concern in this country, which has the best reputation obtainable on Babbitt metals, that has produced a metal which is the equal of genuine Babbitt in tensile strength, compressive strength, Brinell hardness, has greater heat resistance, has much better anti-frictional qualities and yet it does not contain any tin, copper or antimony.

#### Lead Electrically Hardened

It is an electrically hardened lead, with a very small percentage of other ingredients added, which have

#### Metal Lath Manufacturers

The Associated Metal Lath Manufacturers, who moved their offices to Washington during the war to be in close touch with the building operations centering in the capital, have now removed these offices to 226 South LaSalle Street, Chicago, the 10 members of the association having decided that their association could more effectually aid in the solution of many problems which are coming before their industry and render service to the building profession generally if the offices were more centrally located. Wharton Clay has been elected commissioner of the organization. He is an architectural engineer, a graduate of the University of Illinois, a member of the Western Associated Engineers, and was identified with the fireproofing department of the U. S. Gypson Co. before the war. During the war he was a civilian aide to the adjutant general of the army and handled many recruiting campaigns for men for special qualifications needed by the army. C. O. Powell, the new assistant commissioner of the organization, was for nine years with the Northwestern Expanded Metal Co. as sales engineer and advertising manager, and for the past year advertising manager of the Buda Co. While connected with the former company he was chairman of the advertising council of the Associated Metal Lath Manufacturers.

The Consolidated Belting Co. is now located in the plant formerly occupied by the Biddle Motor Car Co., at Germantown and Sedgley avenues, Philadelphia, where it has greatly increased facilities. The company was formerly located at Chester, Pa.

The Edward G. Budd Mfg. Co., Philadelphia, has opened a permanent office in Pittsburgh, Room 910, Park Building, in charge of E. H. Harris.

never before been used in Babbitt metals. The process of manufacture takes several days to attain the desired result and while the cost of manufacturing is very much more expensive than any other Babbitt, there still is an enormous saving when compared with tin base alloys.

The United States Bureau of Standards report of tests shows the metal had a tensile strength of 13,000 lb. per sq. in. and an elastic limit of 11,525 lb. per sq. in., and in a running test on bearings shows that at 1000 lb. per sq. in. load running at 400 r.p.m., the final temperature was only 150 deg. Fahr.

#### Purchasing of Solders

In regard to solders, practically the same arguments apply as in Babbitt metals. We should be able to tell you the proper formula to use when you tell us what you want to do with the solder. We know that solder is made from tin and lead. Certain combinations produce certain results. As you cut down in tin and increase lead you raise the melting point and lose fluidity. Strange things happen in combinations of metals. For instance, tin melts at 450 deg. Fahr.; lead at 628 deg. Fahr.

Theoretically a mixture of 50 per cent tin and 50 per cent lead should melt at 540 deg. Fahr. Actually it melts at 398 deg. Fahr., which is lower than the melting point of either of the metals that compose it. This means that with a solder half and half, you get great fluidity at low temperatures. Therefore, a man can cover a greater surface in less time and use less solder than if he were compelled to use a solder which was more sluggish, and would have to change his irons more frequently, and could not make as thin a seam.

As you know, a purchasing agent can save money on the cost of the solder by buying one that contains less tin, but if by so doing he increases the time of the job, and uses more pounds of solder, there is no real economy. In many cases, however, these lower grade solders would be better for the purpose than the higher grade solders and here again you can help us by giving the information, which will enable us to recommend the proper formula.

#### A British Basic Slag Association

British basic slag manufacturers have been induced to feel by the control exercised for some time past by the ministry of munitions and the food production department over the sale of their product, the desirability of an organization which could adequately voice their opinions as a body as well as safeguard and promote their interests as manufacturers when occasion seems to require, according to the *London Iron and Coal Trades Review*. It is, therefore, quite in accordance with the general spirit of reconstruction and organization which pervades every section of the trading community, that the basic slag manufacturers who recently had a representative meeting of their industry, then determined formally on the inauguration of the basic slag association. A. W. Thomson, Alexander Cross & Sons, Ltd., was elected chairman; G. V. Parker, the South Wales Basic Slag Co., Ltd., vice-chairman, and W. Hyde Barnett, Alfred Hickman, Ltd., treasurer. The secretary is J. King Stewart, 70 Fenchurch Street, London.

The Standard Refractories Co., Claysburg, Pa., manufacturer of silica brick and other refractories, recently issued \$500,000 10-yr. 6 per cent first mortgage bonds. The company advises us that this issue of bonds was made for the purpose of refunding a smaller bond issue now outstanding, also for permanently funding additions made to this plant during the war period to purchase a ganister property, which the company is now operating, and also to add to its plant a complete machine shop and storehouse. It is not the intention of proceeding at once with the building of the new machine shop and warehouse, but this will likely be done later this year.

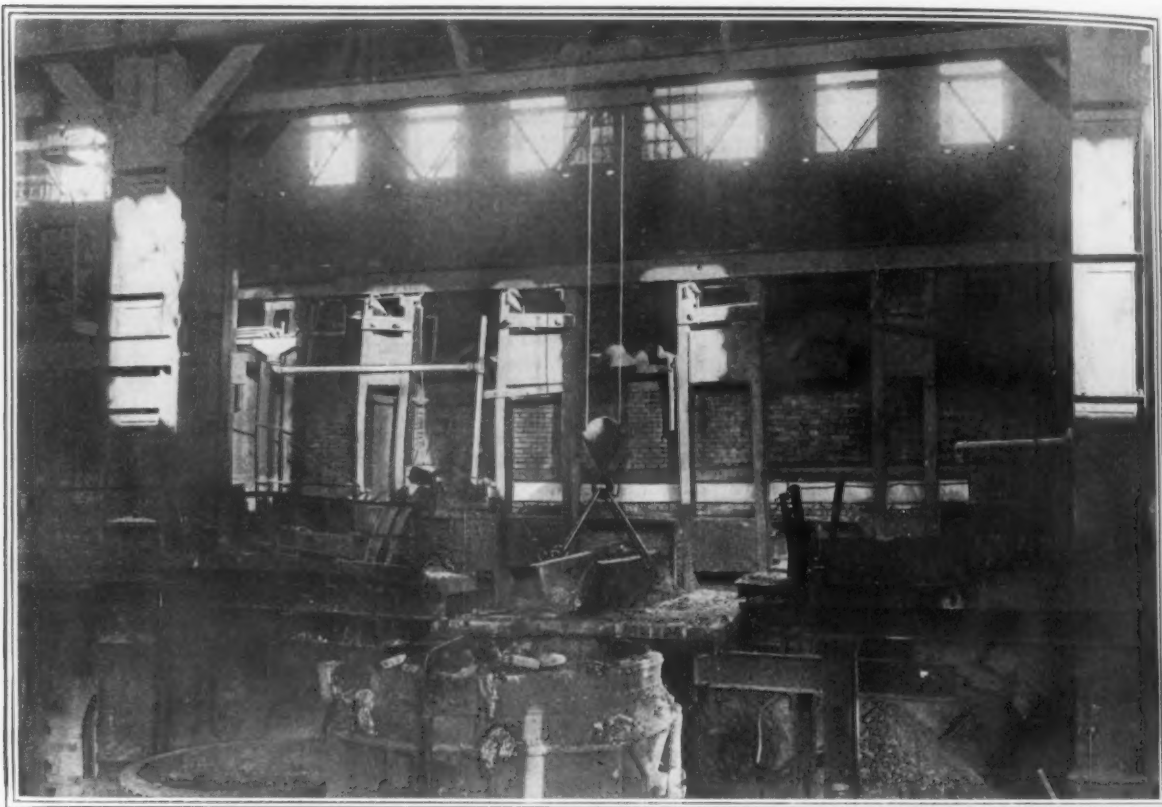
## WATER-COOLED SLAG LINE

### Invention Designed to Eliminate Destructive Action of Slag on Open-Hearth Linings

A water-cooled slag line in basic open-hearth furnaces in accordance with a system invented and patented by Samuel Naismith, Naismith Co., 1520 Marquette Building, Chicago, will eliminate, it is claimed,

have been found to obviate the need of repairing the slag line after each heat.

The water cooler is substantially a substitute for the usual neutral joint, and it so effectually keeps down the temperature of the silica bricks in the walls that these do not melt, thereafter to run down into the basic material and do mischief. The side walls are supported by angles, thus relieving the basic bottom or hearth of all weight. The coolers are made so they are detach-



Back of Open-hearth Furnace, the Slag Line of Which Is Water-Cooled. The cooler containers are made of 12-in. pipe, flattened and with sealed ends, and are exposed on the outside of the furnace. Shore coolers are used between the doors on the front side. This installation is in a Chicago mill

the troublesome and expensive destruction of the furnace lining at the slag line resultant from the action of the slag. Mr. Naismith is a practical furnace builder.

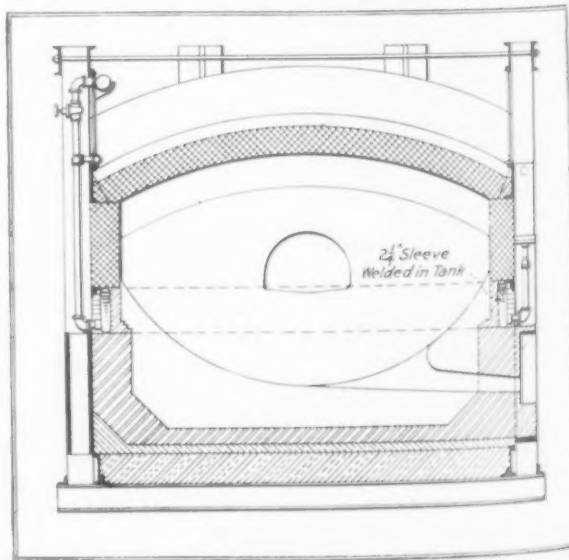
The cooling device consists essentially of water coolers positioned in the walls of a furnace at the slag line, adjacent to the banks. Through the coolers run continuous streams of water which keep down the temperature of the magnesite and silica brick with which the casing of the cooler is in contact, thus preventing their fluxing, with consequent undermining of the wall of the furnace. Mr. Naismith's invention provides for the elimination of the chromite or neutral brick commonly used.

The coolers consist of 12-in. pipe, in appropriate lengths, flatted to oblong form, with the ends sealed by welding in pieces of  $\frac{3}{8}$ -in. plate. Sleeves are welded into the coolers for the attachment of pipes, the feed pipes entering on the side near the bottom, and the discharge pipe at the top. Waste water from the ports, doors and door frames is utilized. At the sides and back of the furnace the cooler may consist of one continuous container, but at the front a series of separate coolers are used because of the several doors. The coolers may be installed while the furnace is down for relining.

It is stated that in actual use over a period of three years of furnaces equipped with the system there was not a single break out, while it was demonstrated that in that period of time a saving of approximately \$12,000 could be effected, while the production of a furnace can be increased about 10 per cent. Much is saved in time required for repairs and relining, as well as a considerable saving of magnesite brick. The coolers have been used in a large Chicago mill for three years and

able, and they can be readily replaced should any of them happen to give way.

In his patent papers, Mr. Naismith makes the claim that the use of his invention makes unnecessary the use of one layer of magnesite brick in the hearth inasmuch as the coolers prevent the intense heat from attacking the brick therein. The patent was issued in March, 1917.



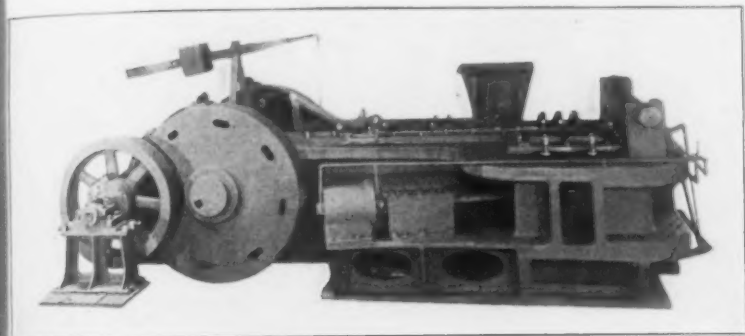
Open-Hearth Furnace Equipped with Naismith Water-Cooled Slag Line. Broad claims are made for the economies effected by the device. The silica side walls are supported by angles



## Special Upsetting Forging Machine

One of the developments of the war in machinery lines growing out of the extraordinary requirements of the Government was a special upsetting forging machine built by the Ajax Mfg. Co., Cleveland, Ohio. Among the many unusual forgings required in the construction of artillery parts was one which it was believed could be most economically produced by means of an upsetting forging machine providing an extra large stock gather, or in other words, a machine with which a stroke of 20 in. could be obtained after the gripping die closes and holds the stock while the upsetting ram or tool performs its upsetting operation.

The problem of supplying a forging machine for this operation was submitted to the Ajax Mfg. Co. by the Ford Motor Co., which had a contract for this particular forging and which saw the economical pos-



Upsetting Forging Machine Providing an Extra Large Stock Lather, Built for the Construction of Artillery Parts. The heading tool has a travel of 24 in. after the dies have closed.

sibilities of producing it by the upsetting method. The machine developed has a moving gripping die that is operated by an air cylinder, and the heading tool or ram has a travel of 24 in. after the dies have closed. This stroke can be increased to 26 in. in case of emergency. The die space will take a die 35 in. high by 27½ in. long. The crank shaft has a gear on each end, thus providing a double gear drive and eliminating torque to the crank which is 13 in. in diameter. One of the illustrations shows this double gear drive with two safety flywheels provided with safety shear pins. The air cylinder operates under 100 lb. pressure. The machine occupies a floor space approximately 24 x 15 ft., and its total weight complete is a little over 200,000 lb.

The Ford company before the armistice was declared, turned out many thousands of the forgings for which this special machine was designed. This company, which also forged large quantities of Liberty airplane motor cylinders, is said to have the largest installation of upsetting forging machines in the world, all of the Ajax make.

## Steel and Bronze Bells Compared

That steel bells were merely a war substitute for bronze bells in Germany, and that their disadvantages outweighed their advantages, is denied by the Bochum Verein, a prominent German steel company which specializes in the manufacture of bells. This assertion, the Bochum Verein states, is nothing but a repetition of old statements which have already been disproved. So far from the use of steel for bell-founding being a war substitute industry, the Bochum Verein has made steel bells for 60 years, and before the war had made over 7500 church bells. In Berlin alone there are more than 60 peals of steel bells. They are more durable than bronze bells and with an equal volume of sound can be heard at a greater distance. Under normal conditions with steel about one-third the price of bronze, steel bells are at least 50 per cent cheaper than good bronze bells, and this will presumably again be so after the war.

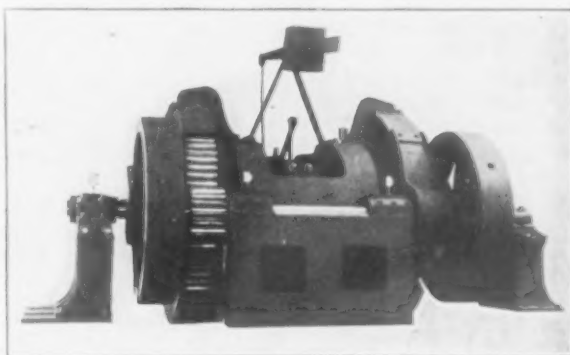
Exception is also taken to the statement that the cost of maintenance of steel bells is greater than that of bronze bells owing to their being so much heavier. Up to one ton each steel bells are not heavier than

bronze, and above that weight they are considerably lighter, hence it is incorrect to say that they require especially constructed belfries or an increased staff of ringers. The bronze bells in the Kaiser Wilhelm memorial church at Berlin, which weigh 30½ tons, would only weigh 24¼ tons if they were made of steel. The only item of increased maintenance cost of steel bells is that of renewing the rust-protecting coat with which the bells are covered for aesthetic reasons, although a small coating of rust would as little affect their tone as does the oxidized patina of the bronze bells. The first steel bell was cast by the Bochum Verein in 1851, but the 68 years that have elapsed since then have been long enough to prove the durability of the material. Bronze bells are very apt to crack as a result of constant ringing or of rapid changes in temperature and, in the event of fire, steel bells do not melt, neither are they broken when falling from the belfry.

As for the assertion that the modern steel bell is a mere utility article equally devoid of beauty of appearance and sweetness of sound, that is a question of taste that does not admit of argument.

## Planing Nickel Steel Forging

A 3 per cent nickel steel forging was recently machined successfully on the accelerating planer built by the Powell Machine Co., Worcester, Mass., using a Stellite No. 4 tip in the cutting tool. A cut was made with a feed of 3/16 in. and a depth of 5/16 in., and a speed of 75 ft. per min. was obtained for the greater amount of travel of the planer, further speed being impossible owing to incapacity of the motor. The entering cut was about 35 ft. per min., and in accordance with the scheme of operation of the planer the speed is retarded just before the return of the platen. A total surface 6½ ft. long and 16 in. wide was cut and the tool found in a condition capable of considerable additional work. The forging, which was annealed for 10 hr. at 950 deg. C. (1710 deg. Fahr.) and air chilled, had the following composi-



The Crank Shaft Has a Double Gear Drive which Eliminates Torque to the Crank. There are two safety fly wheels provided with safety steel pins.

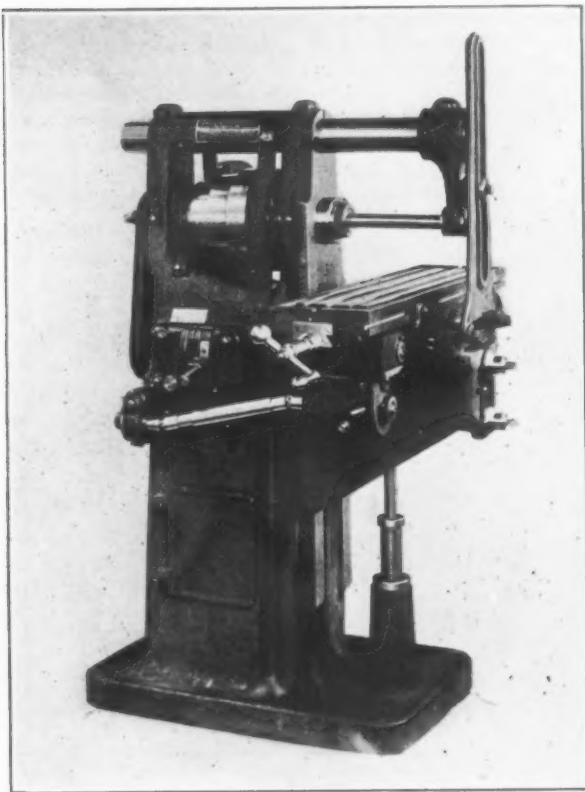
tion: Carbon, 0.42 per cent; manganese, 0.56 per cent; phosphorus, 0.031 per cent; sulphur, 0.026 per cent; silicon, 0.160 per cent; nickel, 3.08 per cent; chromium, 0.08 per cent; copper, 0.05 per cent.

At a recent meeting in Sheffield, England, of British manufacturers who contracted during the war to furnish the government with cupro-nickel and brass, W. G. Turner, who presided, recalled the circumstances under which Sheffield was called upon to make cupro-nickel for small-arms ammunition at a critical period of the war. The difficulties then appeared to be insuperable. The makers had to organize casting and rolling teams from men who had never seen the inside of a mill, and the government required accurate rolling to a thousandth of an inch. Notwithstanding the severe standards the makers were called upon to increase the percentage of scrap used in the furnaces to 75, and yet to produce the same results as from a charge of mostly new metal.

### Back Geared Milling Machine

The Davenport Mfg. Co., Meadville, Pa., announces the addition of a new size milling machine to its line. Twelve spindle speeds, in geometrical progression, range from 20 to 350 r.p.m. Twelve feed changes, obtained through three levers, are provided from 0.004 to 0.047 in. per revolution of the spindle. Reversal of feed is obtained through a push rod on the feed box and all parts of the mechanism are oiled from one large oil pocket through an opening in the column. The drive is by a roller chain from the spindle.

The countershaft has two speeds; 123 to 270 r.p.m. Adjustable dials graduated in thousandths of an inch



This Milling Machine Provides 12 Spindle Speeds in Geometrical Progression, from 20 to 350 R.P.M., and 12 Feed Changes from 0.004 to 0.047 in.

are provided for longitudinal, cross and vertical movements.

The table which is 38 x 10 in. has a working surface over its full length and width and is equipped with three T slots,  $\frac{5}{8}$  in. wide. The table feed is by a screw giving  $\frac{1}{4}$  in. movement of the table for each turn of the handle and a crank at the end of the table gives a return of  $1\frac{1}{4}$  in. for each turn of the crank.

### New Airtight Ash Pit Door

A 24 x 36 in. ash pit door is recommended for ordinary use by the American Steam Conveyor Corporation, Chicago. Three other sizes of doors are also built by the company of the same general design, 18 x 18 in., 22 x 26 in. and 24 x 24 in. The frame of the door is of cast iron, with the hinge and locking lugs cast on. The frame is of an angle design and sets well back into the setting, and is fastened into the pit wall by four bolts, one in each corner. The hinge lugs are designed to meet the hard usage to which these doors are subjected.

The door is of cast iron and is provided with a heavy ventilated cast iron liner to prevent contact with the hot ashes and consequent warping. The bearing surfaces of the door and frame are machined to make an airtight joint.

Two hinges of the floating type are provided. The hinge bars are pivoted to the frame and carry the door at the center where it is pivoted to the bars. This gives a distributed pressure over the door and keeps a tight joint at all points with no possibility of a clinker in the corner of the frame opening, breaking or bending the

door by a wedge action. It also allows the door to be swung entirely out of the operator's way. The door is locked by means of wing nuts at the end of the hinge bars. In the case of the 24 x 36 in. door, two locks are used. The other sizes have but one locking lug.

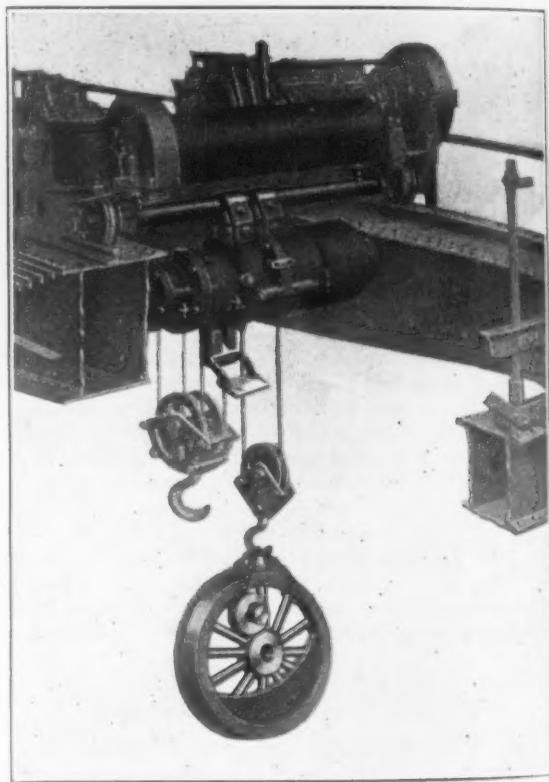
### Auxiliary Hoist for Traveling Cranes

An auxiliary hoist for attaching to any standard overhead electric traveling crane has been developed by N. B. Payne & Co., 25 Church Street, New York.

It is pointed out by the manufacturer that the average traveling crane in a day's work usually handles a greater number of light loads than heavy loads. Since the cranes for heavy lifting are slow moving, their use results in a loss of time when they handle the light loads. With the auxiliary hoist, a light load may be handled at a very much higher speed. Also the auxiliary hook and block being much lighter than those of the main crane, a power saving is effected.

The labor saving with the auxiliary hoist is emphasized as an important item especially when a gang of men must wait for a small piece being slowly moved by a large crane.

By the application of the auxiliary attachment, any standard single hoist electric traveling crane may be equipped with two lines for drop bucket service. The control may be arranged from cage, floor or pulpit to suit the crane to which it is applied. It is stated that the auxiliary can be quickly attached by the purchaser.



Auxiliary Hoist Attached to Large Electric Traveling Crane. It is located so as not to shorten the travel of the trolley on the bridge, nor interfere with the accessibility of the main hoist.

Ordinarily from 1 to 5-ton standard auxiliary hoists are supplied by the makers to meet the usual requirements. Larger special sizes, however, are furnished when specified.

The Railway & Power Equipment Co., Woolworth Building, New York, is planning increased scope of operation. With this in mind it has been incorporated in Delaware with a capital stock of \$5,000,000, \$3,000,000 common; and in addition to the interests of Charles F. Johnson, who has been carrying on the business for about 20 years, it has taken in other interests. Its new work is planned to include engineering and equipment work in any way connected with power, railroads, industrial establishments and contracting.

# United States Steel Corporation in War Time

Judge Gary Describes the Many Unusual Activities of the Past Year—Production of Plates Increases, but Nearly All Other Lines Decrease

THE report of the United States Steel Corporation for the year 1918 is a highly interesting narration of the very important part which the corporation took in the winning of the war. Without any attempt at fine writing, chairman Gary tells plainly and and very impressively of the many lines in which the subsidiary companies worked with the Government, often turning out products vastly different from those previously produced, as, for example, when the American Sheet & Tin Plate Co. undertook the study of chemicals for gas masks; when the same company rolled sheets for helmets after overcoming many difficulties; and when the National Tube Co., after extended experimental work, manufactured gas shells and mortar shells made from welded pipe.

The earnings, after making allowances for the estimated amount of the Federal income and war excess profit taxes, were \$208,281,104, a decrease of \$95,880,367 compared with 1917.

Although the country as a whole increased its production of pig iron by about 1.12 per cent the Steel Corporation shows a decline of 1.8 per cent, the figures being 15,940,954 tons for 1918 and 15,652,928 tons for 1917. The production of steel ingots declined 3.5 per cent and all rolled and other steel products for sale declined 7.3 per cent, but a notable exception to the decline in production of rolled products was plates, the production for 1918 being 2,171,362 tons compared with 1,473,625 in 1917.

## Chairman Gary's Review of the Year

Chairman Gary in his comments said:

"The operations of the subsidiary companies during 1918 as represented by production and shipment of products did not on the whole reach the totals for the preceding year, notwithstanding the demands for iron and steel products were generally constant and large. This was due principally to the very severe weather conditions during the first quarter and the shortage of efficient labor for mill operations which prevailed throughout the entire year. Precedence was given in mill operations to the production of those classes of steel required essentially for use in prosecuting the war. And in these lines of output some remarkable results were shown. The production of plates, largely for use in shipbuilding, reached a total of 2,171,362 tons, an increase of 697,737 tons, or 47.3 per cent over the output in 1917. About 65 per cent of the entire output of steel products of the subsidiary companies during the year 1918 was supplied to Government departments, including the Federal Railroad Administration, and to the Allies of the United States in the war, either by direct shipment to them or to manufacturers for fabrication by them for war purposes. During substantially the entire year, the distribution of steel products was with the concurrence of the manufacturers controlled by the United States War Industries Board, so that broadly speaking the entire output went into channels for use in the prosecution of the war.

"The prices received for all products for the entire year averaged slightly higher than those received for the preceding year. This arose from the fact that the prices received during the first half of 1917, largely for deliveries on contracts entered prior to 1917, were considerably below the prices which prevailed after the entrance of the United States into the war. The prices received in 1918 generally speaking were, after conferences with representatives of the iron and steel industry, determined by the United States War Industries Board and approved by the President of the United States, although considerable tonnage, especially for the railroads, was delivered on contracts entered early in 1917, and prior thereto, in many instances at prices considerably lower than the maximum established by the Government.

"The tonnage of the unfilled orders of the subsidiary companies at Dec. 31, 1918, was 7,379,152 tons of rolled steel products, in comparison with a total of 9,381,718 tons at the close of 1917. Because of the action of the United States Government concerning the disposition and use of steel products, there was naturally a rela-

tively small amount of forward buying during 1918. Since the signing of the armistice there has been a steady and good demand for deliveries of steel on then existing contracts and orders; also the bookings of new business have been quite up to what could be expected under prevailing conditions.

"There was charged off to gross earnings and net income for the year the sum of \$52,215,000 to cover amortization of a proportion of the cost of facilities installed for production of articles contributing to the prosecution of the present war. This amount is additional to the sum of \$29,785,000 provided for similar purpose in 1917. The total of \$82,000,000 thus provided covers the approximate amount of expenditures made since April, 1917, in excess of current depreciation charged, for construction or acquirement of facilities installed for the purposes specified which no longer possess any investment value (except salvage), and also the excess cost of construction or acquirement of improvements over their investment value for future use in the business.

"During 1918 three general advances were made in the wage rates of employees of the subsidiary manufacturing and iron mining companies. On April 16 an advance of 15 per cent and on Aug. 1 an increase of 10 per cent was made in common labor rates, the rates for other classes of employees being advanced relatively. On Oct. 1 the plants of the subsidiary manufacturing companies were placed on the basic 8-hr. day, with time and one-half paid for overtime. This was equivalent to an average increase in wage rates of about 10 per cent, since the employees generally continued to work the same number of hours as previously.

"The total charge for the year for taxes, exclusive of Federal income, war-profits and excess-profits taxes, equaled \$23,367,213, an increase of \$4,566,954 over the charge for the preceding year. A part of the increase for the year is accounted for by payments for war excise taxes, especially on transportation service. A reserve of \$274,277,835 was made from the earnings of 1918 for account of Federal income, war-profits and excess-profits taxes for that year. In view of the general uncertainty as to the degree of application of certain provisions of the 1918 income tax law, it was impossible at the date of closing the accounts for this report to determine the exact amount of these taxes which may become due and payable. It is thought, however, the amount reserved will be sufficient to cover the final figure, although upon compilation of the tax returns a subsequent adjustment may be necessary.



"At the close of the year there were unexpended on active authorized appropriations for new extensions and additions and betterments, including iron ore mining stripping operations for 1918, the sum of \$115,000,000. It is expected the greater part of this will be expended during 1919.

"During the year 1918 a total of \$12,158,947 of bonds, mortgages and purchase money obligations of the Corporation and the subsidiary companies was paid.

"On Jan. 1, 1918, the Government through the United States Railroad Administration took over the operation and maintenance of the following subsidiary railways of the Corporation, viz.: Bessemer & Lake Erie R. R., Elgin, Joliet & Eastern Ry., Duluth & Iron Range R. R. and Duluth, Missabe & Northern Ry. No formal agreement has as yet been entered into between the railway companies and the Director General for the use and control of the properties named. There has been taken up, however, in the accounts and earnings of the subsidiary companies a tentative and estimated amount on account of compensation due from the United States Railroad Administration.

"Employees of the United States Steel Corporation and of the subsidiary companies were again in January, 1919, offered the privilege of subscribing for shares of the common stock of the corporation, at the price of \$92 per share, under substantially the same terms and conditions as those which attached to previous years' offerings of stock for subscription. At the date of the writing of this report, subscriptions have been received from 60,741 employees for an aggregate of 156,680 shares, an increase of 40.4 per cent in the number of subscribing employees and 64.2 per cent in the number of shares, in comparison with the subscriptions received in 1918. The usual distribution of special compensation to employees under the plan adopted in 1903, was also made.

### Shipments

"The shipments of all classes of products during 1918, in comparison with the shipments during the preceding year, were as follows:

	1918 Tons	1917 Tons	Increase or Decrease	
Domestic Shipments			Tons	Per Cent
Rolled steel and other finished products	12,384,169	13,116,910	812,741	6.2 Dec.
Pig iron, ingots, spiegel, ferro and scrap	307,482	534,768	227,286	42.5 Dec.
Iron ore, coal and coke	1,009,919	999,590	10,329	1.0 Inc.
Sundry materials and by-products	192,925	139,998	52,927	37.8 Inc.
Total tons all kinds of materials, except cement	13,894,495	14,871,266	976,771	6.6 Dec.
Universal Portland cement (bbls.)	7,707,595	10,398,759	2,691,164	25.9 Dec.
Export Shipments			Tons	Per Cent
Rolled steel and other finished products	1,740,817	2,173,195	432,378	19.9 Dec.
Pig iron, ingots and scrap	17,120	19,479	2,359	12.1 Dec.
Sundry materials and by-products	2,305	1,911	394	20.6 Inc.
Total tons all kinds of materials	1,760,242	2,194,585	434,343	19.8 Dec.
Aggregate tonnage of rolled steel and other finished products shipped to both domestic and export trade	14,124,986	15,370,105	1,245,119	8.1 Dec.
	1918	1917	Increase or Decrease	
			Amount	Per Cent
TOTAL VALUE OF BUSINESS (Covering all of above shipments together with other business not measured by the ton unit)				
Domestic	\$1,125,161,294	\$1,926,393,678	\$98,767,586	9.6 Inc.
Export	162,867,991	179,488,730	16,620,739	9.3 Dec.
Total	\$1,288,029,255	\$1,205,882,408	\$82,146,847	6.8 Inc.

### Accident Prevention

"The total amount expended by the corporation and the subsidiary companies during the year for safety work was \$1,110,064, in comparison with \$998,800 in the previous year. Compared with results in 1917, the fatal and serious accidents per 100 employees showed a decrease of 7.64 per cent; and compared with 1906, a decrease of 46.1 per cent. The total amount disbursed by all the companies during 1918 in connection with work accidents was \$3,336,459. The corporation's Bureau of Safety, Sanitation and Welfare has lately issued its Bulletin No. 7, which illustrates and describes some

of the things that are being done by the corporation and its subsidiary companies to improve conditions under which the employees work and live.

### Activities in the War

"It was realized immediately following the entrance of the United States into the war with Germany that the supply of steel, both for direct consumption and use at the front and for the multitude of industrial activities upon which the production of war materials was dependent, was of paramount importance. The president of the American Iron and Steel Institute was in writing requested by the Secretary of War and the Secretary of the Navy to form a committee to mobilize the iron and steel industry and to take general charge of the supplying of steel necessary for war purposes which was done, and the United States Steel Corporation in common with other iron and steel producers at once placed at the disposal of the Government its full and unrestricted services and resources in assisting to meet the military demands of the United States and its associates in the war. It is believed the efforts of the Government were never to an important extent lessened or delayed by lack of a proper supply of steel. During the entire period following the declaration of war and until the armistice was signed, the committee referred to and representatives of the corporation, together with other iron and steel manufacturers, were in constant touch and association with the various governmental departments, commissions and agencies, and devoted much time in assisting and co-operating with the view of obtaining the maximum production of steel and of the various classes of raw materials required for its manufacture. Prior to the entrance of the United States into the war, the corporation had likewise taken a large part in supplying materials to the Allies for their requirements.

"Except for the existence of highly integrated units, with large capacity for the production and transportation of steel products, and their perfection of organization, system, improvements and methods, together with the incidental working capital which permitted immediate extensions, additions and diversifications whenever requested or evidently desirable, the military necessities of the United States and its associates in the war could not have been adequately provided.

"In connection with the above statement the following details are given:

### TONNAGE OF STEEL (ALL KINDS) FURNISHED BY THE CORPORATION FOR WAR PURPOSES

(Includes only tonnage which from available records it is known was applied for war purposes. Unquestionably a large amount of tonnage was in addition shipped to customers and by them used for such purposes.)

	Shipped from Aug. 1, 1914 to Apr. 1, 1917	Shipped from Apr. 1, 1917 to Dec. 31, 1918	Total Aug. 1, 1914 to Dec. 31, 1918
Shipments	Tons	Tons	Tons
The United States Government and other customers in United States	1,434,530	7,669,910	9,104,440
The Allies (exported)	4,623,110	2,669,840	7,292,950
The United States Railroad Administration (during year 1918 only)		2,042,070	2,042,070
Total	6,057,640	12,381,820	18,439,460
PRODUCTS OTHER THAN STEEL			
Toluol and benzol products, gallons	11,802,651	16,067,310	27,869,961
Ammonium sulphate and liquor, pounds	234,016	21,095,638	21,329,654
Spelter, tons	26,890	13,517	40,407
Cement, barrels	46,725	556,742	603,467

"In order to increase the productive capacity of the properties to meet the greater demands for steel necessitated by war conditions, both in respect of volume of tonnage and for new or modified forms of steel, also for sundry auxiliary products and by-products urgently required for war purposes, there has been appropriated and expended since Aug. 1, 1914, for additions, extensions and betterments the sum of \$302,776,000. This covers expenditures both at and for manufacturing plants and by the raw material departments—ore, coal, lime-stone and natural gas—also by the subsidiary transportation interests, the major part of whose operations relate to the carriage from mines to mills of raw materials for iron and steel making. Large outlays were also made for construction of houses and dwellings necessary for employees at various places adjacent to

the plants, and for the development of townsites. These additions and improvements, particularly those made since the United States entered the war, have been made at a greatly increased cost compared with what their installation would have cost under pre-war conditions; but they were made at the request of representatives of the Government and were required for the pressing necessities of the war. The following is a condensed summary of these expenditures:

Properties	Expended Aug. 1, 1914 to April 1, 1917	Excess Cost over Estimated Pre-war Cost	Expended April 1, 1917 to Dec. 31, 1918	Excess Cost over Estimated Pre-war Cost
Manufacturing plants, except shipbuilding	\$69,675,082	\$10,672,374	\$127,144,626	\$52,571,085
Shipbuilding plants			20,963,305	10,206,827
Coal properties	3,401,808	502,266	16,723,848	7,655,370
Iron ore properties	706,209	78,784	3,429,239	1,378,149
Limestone and gas properties	506,848	88,473	2,241,080	1,021,964
Transportation properties	25,747,606	5,150,102	21,356,533	8,621,837
Recovery facilities for em- ployees, etc.	76,741	15,191	10,803,274	5,338,449
<b>Totals</b>	<b>\$100,114,294</b>	<b>\$16,507,190</b>	<b>\$202,661,905</b>	<b>\$86,793,681</b>

"The foregoing aggregate expenditures covered a wide range of additions and improvements, all serving to increase the productive capacity of steel and other products for use in directions contributing to the prosecution of the war. Some of the principal extensions made and facilities installed for the production of strictly war materials and for war purposes are stated below:

Shipbuilding plants at Kearny, N. J., and on the Chickasaw River, near Mobile, Ala. These plants have a total of 20 ways, and an annual capacity of 40 completed 10,000 ton ocean-going steamers. The plants are fully equipped for the complete construction of steamships. The Kearny plant is self-contained in respect of the construction of all ship parts, and the Chickasaw plant will be similarly equipped except as to supplying engines. After conferences with Governmental agencies these plants were conceived and undertaken solely as war measures and to their erection and the construction of ships the full resources of the United States Steel Corporation have been devoted.

Equipment and facilities were installed at nine of the American Bridge Co. bridge and structural shops, also at the Fairfield works of T. C. I. & R. R. Co., for the production of fabricated ship work. The corporation was the pioneer in work of this kind. Orders were undertaken for the fabrication of ship steel for 131 hulls. Of these the steel for 70 complete hulls had been shipped to the close of the year.

Plate mills particularly designed for rolling ship plates were constructed as follows: Homestead, Pa., 110-in. mill; Gary, Ind., 160-in. mill; South Chicago, Ill., 90-in. mill; Fairfield, Ala., 110-in. mill. At Shoenberger plant, the 127-in. plate mill was rehabilitated, and at Lorain, Ohio, Works, changes were made and equipment installed to enable the large skelp mill to roll ship plates. These new mills and improvements to existing mills resulted in increasing the productive capacity of plates approximately 923,000 tons per annum.

At Gary, Ind., a gun forging plant was built for the production of rough-turned gun forgings for 155 mm. field guns and 210 mm. howitzers. Work was commenced on this plant in November, 1917, and the first forgings were made on May 4, 1918 for the Ordnance Department of the United States.

New mills for rolling projectile steel were installed as follows: At Gary, Ind., a 40-in. 2 high blooming mill; at Donora, Pa., a 3-high mill; and at a number of plants the existing rolling mills were modified, improved and extended and special facilities installed to permit them to roll projectile steel. The capacity of the large new Duluth, Minn., plant was devoted to the production of this class of steel. During the period of the war the subsidiary companies shipped a total of 1,733,618 gross tons of projectile steel to the United States and its Allies.

At the South Chicago works of Illinois Steel Co. a plant, consisting of 4 large electric furnaces, was installed to produce high grade steel for gun forgings and other special military purposes. At these furnaces there was also installed a large amount of auxiliary equipment for casting, specially treating and handling the steels produced.

At the Homestead, Pa., works, the armor plate department was enlarged and special equipment and facilities installed to manufacture forgings for carriages for 155-mm. and 9.5-in. guns. There were shipped during the period of the war 49,795 gross tons of armor plate and products of the armor plate department.

Complete plants and equipment for the manufacture of shell forgings of various sizes and types were constructed at the Homestead and Schoen plants of Carnegie Steel Co., and the Ellwood and Christy Park plants of National Tube Co.,

having an annual capacity of about 4,000,000 shells. An aggregate of 703,827 gross tons of shell forgings were shipped during the period of the war.

At Christy Park plant of National Tube Co. there was installed equipment for the production of torpedo and submarine air flasks, steam pipe for war vessels, gas bombs, trench mortars, and airplane motor cylinder forgings. At the Ellwood works, facilities and equipment were provided for the production of small diameter tubing for torpedo boat destroyers and for airplanes.

At various mills of the American Steel & Wire Co., 375 machines were installed to make special forms of barbed wire for military uses.

At the several wire plants special machinery was added to make springs for Browning and Lewis machine guns; for pistols; hand grenades; gas masks; artillery casings and draft gear; Liberty motor springs; stream-line shapes for stays for aircraft. Equipment was also added to make special electrical wires and cables for military uses.

By-Product Coke Plants, with auxiliary toluol and benzol recovery departments, were constructed and extensions made to existing plants, as stated below. The construction of these plants during the period of the war was undertaken principally to meet the requirements of the Government for toluol, benzol and sulphate of ammonia needed in connection with the manufacture of explosives. The plants also increased the production of coke, of which there was a marked shortage throughout the country. The plants were as follows:

#### New Plants

Clairton, Pa.	768 ovens
Cleveland	180 ovens
Lorain, Ohio	208 ovens

#### Additions to Plants

Gary, Ind.	140 ovens
Fairfield, Ala.	154 ovens
At Joliet, Ill., Farrell, Pa., and Duluth, Minn., benzol recovery plants were added to the existing coke plants.	

In the Pennsylvania, West Virginia, Kentucky, Alabama and Southern Illinois coal districts, the corporation's subsidiaries made large expenditures for opening new coal mines and expanding existing operations and mobilizing and handling the product so as to obtain the maximum possible output of coal under the conditions prevailing. The most important single new development of this kind was the opening of new workings at Lynch, Harlan County, Kentucky, at an expenditure of over \$4,000,000. Coal was first shipped from these operations on Oct. 31, 1917, and an output of about 3500 tons per day was reached by July 1, 1918.

"In many lines the subsidiary companies, at the request of the War and Navy Departments, undertook special research work in their laboratories with the view of developing new forms of materials desired for war purposes, and processes for obtaining quantity production. Some of the directions in which this research work developed practical results were the following:

"Immediately upon the declaration of war the American Sheet & Tin Plate Co. undertook the study of chemicals for gas masks and it is understood the Government's first specifications for chemicals were based on data furnished by this company. The chief of the American Sheet & Tin Plate Co.'s research laboratory was transferred to the service of the Government and was placed in direct charge of the designing and manufacturing of all gas masks and the chemicals therefor. Four other employees of the laboratory also entered the department in charge of gas mask manufacture.

"The American Sheet & Tin Plate Co. furnished substantially all of the steel sheets required by the War Department for the manufacture of helmets. The production of the class of steel used for these helmets presented many difficult problems. It had previously been considered impossible to roll steel of the character required for helmets into sheets of as light gage as this product necessitated. After much experimental work it was, however, successfully accomplished through revising materially the methods of rolling previously in use.

"The American Bridge Co., at the request of the War Department, undertook to design and fabricate a special railway mount for naval guns. Three of the company's technical experts were sent to France by the War Department in this connection. Up to the time of signing of the armistice, 17 gun mounts for this purpose had been completed and shipped by the company. A number of these mounts performed effective service at the front.

"The research department of the National Tube Co.,

in co-operation with the Engineering Division, Army Ordnance Department, and the Chemical Warfare Service, conducted extended experimental work on designs for Livens gas shells and Stokes mortar shells made from welded pipe; also on Livens mortars with the object of decreasing their weight and increasing their strength. As a result the company was directed on July 15, 1918, to proceed with the manufacture of shells of the design it had submitted. The first shipment of shells (designed to be used for phosgene gas) was made on July 26, 1918, and the entire order was completed by Nov. 15, 1918. It is understood the shells furnished by National Tube Co. were the only ones of

reus and commissions, including the Red Cross, Y. M. C. A. and kindred associations. These officials and employees included executives, experienced operating officers, engineers, scientific and technical men, as well as trained artisans and office employees. In addition many of the leading officials of the corporation and the subsidiary companies took an active part from the beginning of the war in serving locally in their respective communities as members of draft boards, Red Cross, Y. M. C. A., Liberty loan and food committees, and other governmental and quasi-governmental agencies. Employees to the number of 34,407, or about one-eighth of the total average number of employees, entered the active military and naval service of the United States.

"There were turned over to the Government on requisition and for use in the Army and Navy service seven of the ocean-going steamers owned by the corporation; also five vessels of its fleet operating on the Great Lakes, together with one tugboat. The U. S. Steel Products Co. (a subsidiary of the corporation) also husbanded five vessels for account of the Naval Overseas Transport service, i. e., furnished supplies for deck,

Production for Three Years				
Products	1918 Tons	1917 Tons	1916 Tons	
Iron ore mined				
In the Lake Superior region:				
Mesa range	21,574,526	23,806,268	24,928,039	
Vermilion Range	808,994	1,039,807	1,314,002	
Gogebie range	1,916,220	2,197,554	2,369,460	
Menominee range	1,172,319	1,120,382	996,983	
Marquette range	338,344	491,760	647,132	
In the Southern region:				
Tennessee Coal, Iron & R. R. Co.'s mines	2,522,536	3,125,998	3,099,553	
Total	28,332,939	31,781,769	33,355,169	
Limestone quarried	5,141,365	6,494,917	7,023,474	
Coal mined:				
For use in the manufacture of coke	25,393,155	24,554,525	26,606,041	
For steam, gas and all other purposes	6,354,980	6,942,298	6,162,340	
Total	31,748,135	31,496,823	32,768,381	
Coke manufactured				
In bee-hive ovens	9,962,403	11,177,247	12,479,160	
In by-product ovens	7,795,233	6,284,428	6,422,802	
Total	17,757,636	17,461,675	18,901,962	
Blast furnace production:				
Pig iron	15,700,561	15,460,638	17,412,049	
Spiegel, ferromanganese and ferrosilicon	240,393	192,290	195,588	
Total	15,940,954	15,652,928	17,607,637	
Steel ingot production:				
Bessemer ingots	5,630,246	6,405,390	7,273,766	
Open hearth ingots	13,953,247	13,879,671	13,636,823	
Total	19,583,493	20,285,061	20,910,589	
Rolled and other finished steel products for sale:				
Steel rails (heavy and light tee and girder)	1,471,508	1,594,196	1,533,681	
Blooms, billets, slabs, sheet and tinplate	1,489,737	1,692,348	1,881,526	
Plates	2,171,362	1,473,625	1,332,262	
Heavy structural shapes	1,079,601	1,004,537	1,029,682	
Merchant bars, hoops, skelp, light shapes, etc.	2,159,279	2,650,970	2,715,277	
Tubing and pipe	1,190,594	1,234,129	1,338,892	
Wire rods	209,350	267,071	278,197	
Wire and wire products	1,445,567	1,821,985	2,004,494	
Sheets (black and galvanized) and tinplates	1,356,119	1,740,949	1,786,642	
Finished structural work	503,380	550,744	557,953	
Angle splice bars and all other rail joints	145,305	207,846	277,271	
Spikes, bolts, nuts and rivets	67,514	91,980	95,096	
Axles	141,480	220,291	173,530	
Steel car wheels	84,331	110,014	107,167	
Sundry steel and iron products	334,356	282,226	349,122	
Total	13,849,483	14,942,911	15,460,792	
Spelter	41,715	67,418	55,898	
Sulphate of iron	42,321	43,942	46,263	
Fertilizer—"Duplex basic phosphate"	12,022	11,574	8,618	
Universal Portland cement	7,287,000	10,917,000	10,425,600	

this kind delivered in France in time to be used, and that they were satisfactory in every particular.

#### Special War Work

"Large quantities of standard forms of material of the production of the subsidiary companies were furnished for war purposes. A great deal of this tonnage was of special analysis and shape, or produced under special conditions as to heat treatment, rolling, finish and assembling. All this called for much research work, the revising of methods of manufacture and procedure and close co-operation with the various departments and bureaus of the Government. In this way results were secured as to quantity production and according to the Government's schedule in a manner which met every expectation and desire.

#### In the Country's Service

"Upward of 200 officials and experienced employees of the corporation and its subsidiary companies were granted leaves of absence during the war to connect themselves with various governmental departments, bu-

Comparative Income Account			
	1918	1917	+Increase -Decrease
EARNINGS—Before charging interest on bonds and mortgages of subsidiary companies:			
First quarter	\$59,138,031.37	\$78,994,371.04	-\$19,856,339.67
Second quarter	64,821,521.22	90,592,701.88	-25,771,180.66
Third quarter	45,211,708.47	73,007,297.57	-27,795,589.10
Fourth quarter	39,109,843.17	61,657,101.04	-22,457,257.87
Total for year	\$208,281,104.23	\$304,161,471.53	-\$95,880,367.30
Less, interest on outstanding bonds and mortgages of the subsidiary companies	8,930,424.33	8,869,291.50	+ 61,132.83
Balance of earnings	\$199,350,679.90	\$295,292,180.03	-\$95,941,500.13
Less, charges and allowances for depreciation applied as follows, viz.:			
To depreciation and extraordinary replacement funds and sinking funds on bonds of subsidiary companies	33,117,398.16	43,296,038.26	-10,178,640.10
To sinking funds on U. S. Steel Corporation bonds	7,601,425.54	7,257,233.41	+ 344,192.13
Net income in the year	\$158,631,856.20	\$244,738,908.36	-\$86,107,052.16
Deduct:			
Interest on U. S. Steel Corporation bonds outstanding	20,891,116.24	21,256,303.17	-365,186.93
Premium paid on bonds redeemed, viz.:			
On subsidiary companies' bonds	70,135.35	117,914.50	-47,779.15
On U. S. Steel Corporation bonds	767,681.25	745,933.69	+ 21,747.56
Balance	\$136,902,923.36	\$222,618,757.00	-\$85,715,833.64
Add: Net balance of sundry charges and credits, including adjustments of various accounts	629,453.96	1,600,807.54	-971,353.58
Dividends on U. S. Steel Corporation stocks, viz.:			
Preferred, 7 per cent.	25,219,677.00	25,219,677.00	
Common:			
1918, regular 5 per cent., extra 9 per cent.	71,162,350.00	91,494,450.00	-20,332,100.00
1917, regular 5 per cent., extra 13 per cent.			
	\$41,150,350.32	\$107,505,437.54	-\$66,355,087.22
Less, deductions as follows:			
Additional allowance to cover amortization of part cost of facilities installed for production of articles contributing to prosecution of the war	12,215,000.00		+ 12,215,000.00
Appropriated on account of expenditures for additional property, new plants and construction		55,000,000.00	-55,000,000.00
Balance carried to undivided surplus	\$28,935,350.32	\$52,505,437.54	-\$23,570,087.22

\*Balance of earnings after making allowances for estimated amount of Federal income and war excess profits taxes.

engine and steward's departments in addition to supervising necessary repairs to the vessels.

#### Great Lakes Fleet

"The U. S. Shipping Board was permitted to utilize the corporation's entire fleet on the Great Lakes in



training Naval Reserves. There were placed on these vessels 500 Naval Reserves who received instruction and training under the direction of the fleet officers. In the fall of 1917, at the request of the U. S. Shipping Board, the corporation's fleet organization took charge of the work of manning and delivering at Montreal and Quebec vessels commandeered by the Shipping Board on the Great Lakes. This work involved furnishing the hulks (which had been cut in two to enable them to pass through the locks) with provisions and fuel and making all necessary arrangements for handling and towing them through the lakes, canals and rivers to the lower St. Lawrence River ports. An important effort of the corporation's Great Lakes fleet organization was in taking an active and leading interest in the mobilization of its fleet and other vessels by co-operating with the United States Food Administration in the movement of grain and other commodities vital for the successful prosecution of the war. The president of the Pittsburgh Steamship Co. (the corporation's subsidiary) was chairman of the Mobilization Committee which handled all ships on the Great Lakes in the fall of 1917. This committee furnished about one-half million dollars to keep the channels open with ice-breakers to enable the fleet to bring down the Lakes the scheduled quantity of grain.

### Inventories

"The net book valuation of the inventories for all the subsidiary companies, after allowing credit for reserve of \$51,289,603 for account of actual cost or market value of inventory stocks in excess of normal prices therefor, equalled at Dec. 31, 1918, was \$274,753,600, an increase of \$51,085,514, in comparison with preceding year.

The following is a general classification of the inventory valuations at Dec. 31, 1918, in comparison with the valuations at the close of the preceding year:

	Dec. 31, 1918	Dec. 31, 1917
Crucibles, manganese and zinc	\$69,696,079	\$66,536,015
Limestone, fluxes and refractories	7,939,925	5,646,067
Coal, coke and other fuel	12,526,191	6,768,898
Pig iron, scrap, ferro and spiegel	31,144,691	16,563,857
Pig iron, lad, scrapper, copper, nickel, aluminum and dross and drosses	23,266,344	15,318,114
Rolls, molds, steels, annealing boxes, etc.	16,467,910	12,458,223
Lighting	5,062,915	2,947,003
Booms, joists, slabs, sheet and tinplate bars, etc.	21,197,821	13,083,437
Wire rods	1,536,544	1,223,347
Bars	3,197,775	1,685,362
Finished products	45,003,580	33,545,964
Manufacture supplies, stores and sundry items not otherwise classified	52,303,886	36,019,562
Mining supplies and stores (for ore and coal properties)	10,826,769	7,768,634
Railroad supplies and stores	3,783,473*	9,651,430
Merchandise of supply companies	1,710,542	1,333,388
Material, labor and expense locked up in trades and structural contracts	\$46,336,517	
Loss, bills rendered on account	45,358,281	
	978,226	5,743,891
Stocks stored and on consignment	10,852,133	8,376,794
Material in transit	8,548,389	8,670,750
Total	\$326,043,203	\$253,938,756
Less reserve for account of actual cost or market value of stocks in excess of normal prices therefor	51,289,603	30,270,670
Balance	\$274,753,600	\$223,668,086

\*Does not include inventories of subsidiary railroads under Federal control.

### Warehouses Turned Over

"In October, 1917, at the request of the Navy Department, there was turned over to it under a leasehold arrangement the entire warehouse property, including buildings, equipment and docks of the corporation, located on San Francisco Bay, San Francisco. This necessitated the corporation removing from the premises its warehouse stocks of products and establishing temporary warehouse facilities elsewhere in San Francisco and on the Pacific Coast. The Navy Department remodeled the property for use in the construction of torpedo boat destroyers, on which work the plant has been constantly and is now employed. The Navy Department has advised that the plant will be returned in the fall of 1919.

### Volume of Business

"The volume of business done by all companies during the year, as represented by their combined gross sales and earnings, was \$1,744,312,163, as compared with \$1,683,962,552 in the preceding year.

"The following is a statement of the gross sales and earnings classified by operating groups. Gross sales of products are included on basis of f.o.b. mill values.

	1918	1917	Increase or Decrease
Gross sales by manufacturing, iron ore and coal and coke companies:			
To customers outside of U. S. Steel organization	\$1,288,029,255	\$1,305,882,408	\$82,146,847 Inc.
Inter-company sales (sales between subsidiary companies)	404,543,392	377,404,530	27,138,862 Inc.
	\$1,692,572,647	\$1,683,286,938	\$109,285,709 Inc.
Gross earnings and receipts of transportation and miscellaneous companies:			
Transportation companies:			
Railroads under Federal control		50,867,091	50,867,091 Dec.
Other subsidiary transportation companies	35,957,526	37,387,708	1,430,182 Dec.
Miscellaneous companies	15,781,990	12,420,815	3,361,175 Inc.
Total	\$1,744,312,163	\$1,683,962,552	\$60,349,611 Inc.

\*Includes earnings and receipts both for inter-subsidary company business and of business with interests outside of the U. S. Steel organization.

### The Neville Island Project

"In May, 1918, the corporation entered into a contract with the United States at the solicitation of the Secretary of War, to construct for the Government a large plant for the complete manufacture of heavy 12-in. to 18-in. guns and of projectiles for such guns. The plant was designed to manufacture the guns and

### Condensed Balance Sheet

#### Assets

Property account	\$1,563,937,122.89
Advanced mining royalties	20,562,090.12
Mining royalties	33,912,076.17
Deferred charges (applying to future operations of the properties)	1,751,649.41
Investments	4,947,972.53
Sinking and reserve fund assets	63,370,182.27
Current assets:	
Inventories, less credit for reserve and for amount of inventory values representing profits earned by subsidiary companies on inter-company sales of products on hand in inventories Dec. 31, 1918	274,753,600.02
Accounts receivable	113,810,679.39
Bills receivable	3,045,976.32
Agents' balances, including advances account United States War Department for construction of ordnance plant	4,456,994.33
Due from United States Railroad Administration	19,647,695.93
Sundry marketable securities (including U. S. Liberty loan bonds and treasury certificates)	277,745,969.05
Time bank deposits and secured demand loans	15,869,807.24
Cash (in hand and on deposit with banks, bankers and trust companies, subject to check)	173,806,259.41
Total	\$2,571,617,175.08

#### Liabilities

Common stock	\$508,362,500.00
Preferred stock	360,281,100.00
Capital stocks of subsidiary companies not held by U. S. Steel Corporation (par value)	434,642.50
Bonded and debenture debt outstanding	582,646,168.74
Subsidiary companies' non-interest bearing notes	33,912,076.17
Mortgages and purchase money obligations of subsidiaries	651,952.15
Current liabilities	397,781,482.33
Sundry reserve funds	109,819,917.71
Appropriated surplus to cover capital expenditures	110,898,914.10
Undivided surplus of U. S. Steel Corporation and subsidiary companies	466,888,421.38
Total	\$2,571,617,175.08

projectiles complete from the furnishing of pig iron and steel to the final finished products. The contract provided that the corporation should take entire charge of the designing and construction of the plant, subject to approval of general plans by the Secretary of War, and that it should be reimbursed for only the exact cost of outlays made directly for the work which, in accordance with the offer of the corporation, included no compensation for the services of its officials, experts, or its general organization in supervising the work; nor for interest upon considerable sums advanced for the payment of labor, material and other construction expenditures. The corporation at once organized a special department to take charge of the work, appointed a gen-

eral committee composed of ten of its officials, who assisted by their respective staffs and under the direction of the chairman and president of the corporation, undertook the general supervision of the project, all without any charge for services. There were also detached from the service of the corporation and its subsidiary companies 64 of their administrative officials, engineers and other technical and trained employees experienced in construction work, whose time was exclusively devoted to the work. The site selected for the plant was on Neville Island, in the Ohio River, about six miles below Pittsburgh. Rapid progress was made in clearing the site, all general plans were prepared and approved and to a very large extent worked out in detail; necessary construction buildings were erected and some work was done on permanent structures. Contracts were placed with machinery builders for a large quantity of equipment for the plant. A special committee of engineers was sent abroad to study the construction of large gun and projectile plants in England, France and Italy, all with the view of delivering the Government a plant of the most modern, efficient and economically operated type.

Shortly after the armistice was signed, the War Department requested that the work be suspended and later that the contract be canceled. This is now in process of accomplishment, only so much of the operating staff being retained at present as is necessary to consummate settlements with contractors for such work as they have performed under construction contracts. All physical property on the plant site has been surrendered to the War Department. The corporation has been advised by the Secretary of War that its conduct of the work of organization and construction has been in every way entirely satisfactory.

#### Employees and Pay Rolls

"The average number of employees in the service of all companies during three years, and the total salaries and wages paid were as follows:

Employees of	1918 Number	1917 Number	1916 Number
Manufacturing properties	199,029	198,711	187,289
Coal and coke properties	28,378	26,189	25,143
Iron ore properties	12,619	13,198	12,624
Transportation properties	25,055	26,210	24,189
Miscellaneous properties	3,629	3,750	3,423
Total	268,710	268,058	252,668
Total salaries and wages paid	\$452,663,524	\$347,370,400	\$263,385,502

Average salary or wage per employee per day:			
All employees, exclusive of general administrative and selling force	\$5.33	\$4.10	\$3.29
Total employees, including general administrative and selling force	\$5.38	\$4.16	\$3.36

#### Maintenance Replacements

"The expenditures made by all companies during the year 1918 for maintenance and renewals, including the relining of blast furnaces, and for extraordinary replacements, in comparison with expenditures for the same purposes during the preceding year were as follows:

	1918	1917	Increase or Decrease	Per Cent
Ordinary maintenance and repairs	\$96,675,859.17	\$72,146,194.56	\$24,529,664.61 Inc.	34.00
Extraordinary replacements	4,598,968.33	5,955,581.95	1,356,613.62 Dec.	22.78
Total	\$101,274,827.50	\$78,101,776.51	\$23,173,050.99 Inc.	29.67

The entire amount of the foregoing expenditures was charged to current operating expenses and to depreciation and replacement funds reserved from earnings.

#### Liberty Bonds Purchased

"From time to time, prior to the United States entering the war, the corporation purchased an aggregate of \$84,683,000 of various loans issued by the Allies, and since April, 1917, there have been purchased an additional \$15,117,400, a total acquired of \$99,800,400. A portion of the obligations, which are included in these purchases, have matured and been paid and some have been sold.

"The corporation and its subsidiary companies have subscribed for and purchased United States Liberty

loan bonds of the first, second, third and fourth issues, as follows:

Total amount purchased	\$127,500,500
Delivered to employees to Feb. 1, 1919, on their fully paid subscriptions entered through the corporation and subsidiary companies	6,543,800
Balance, held Feb. 1, 1919	\$120,956,700
At Feb. 1, 1919, of the above bonds there were held for account of employees partially paid subscriptions	24,177,800
Leaving amount of bonds held by the corporation and its subsidiaries	\$96,778,900

"The corporation's original subscriptions to the first and second Liberty loan bonds were reduced materially on allotment by the United States Treasury Department.

"The corporation and its subsidiaries have in addition from time to time subscribed for and purchased U. S. Treasury certificates of a net aggregate amount (not counting exchanges and reissues) of \$352,340,500. Of this total, \$196,063,500 have been used to pay Federal income taxes, leaving \$156,277,000 on hand at Feb. 1, 1919.

"In connection with the Government's offerings of third and fourth Liberty loan bonds, the corporation arranged to accept subscriptions from its employees payable in monthly installments. The plan permitted employees to cancel their subscriptions in case for good and sufficient reasons they elected to do so, or were unable to complete payment for the bonds in full. Subscriptions were received as follows:

	Employees Subscriptions	Amount Subscribed
Third Liberty loan	179,374	\$14,028,900
Fourth Liberty loan	202,140	22,871,600
Total		\$36,900,500
To Feb. 1, 1919, cancellation of subscriptions had been received to the number of 74,039 for a total of bonds of		6,984,500
Balance		\$30,916,000
Of this amount there had been paid in full bonds to the amount of		6,543,800
Leaving amount of subscriptions for bonds (at par) in force Feb. 1, 1919		\$24,372,200

"The employees also subscribed liberally to the first and second Liberty loan bonds, but as these subscriptions were not made through the corporation and the subsidiary companies, a statement of the exact amount cannot be given. This same condition prevails in respect of subscriptions to the third and fourth Liberty loan bonds not entered through the corporation. From such data as it has been possible to obtain from local sources, Liberty loan committees and otherwise, it is known that subscriptions to these loans were made by employees other than through their employing companies of at least the sum of \$16,250,000.

#### Red Cross and Other Subscriptions

"The corporation and its subsidiary companies between April 1, 1917, and Dec. 31, 1918, subscribed a total of \$7,375,662 to various funds for war purposes raised by the Red Cross, United War Work Campaign, Young Men's Christian Association, Knights of Columbus and the Salvation Army. These subscriptions were made for the purpose of assisting in furthering the welfare of the large number of employees who had entered the military and naval establishments of the United States, and as a necessary means of protecting the properties of the corporation and its subsidiaries. In addition an extra Red Cross dividend of 1 per cent on the common stock, amounting to \$5,083,025, was paid on July 28, 1917, for the purpose of aiding the stockholders in contributing to the American Red Cross Fund if they desired to do so. The use of the dividend by the stockholders for that purpose was expressly stated to be wholly optional with them in accordance with their interests and patriotic instincts. It is known that a very large part of the dividend was contributed to the Red Cross.

"The subsidiary companies also assisted the Red Cross, United War Work Campaign and kindred associations in collecting subscriptions to war funds by employees, through accepting orders from the latter to be paid out of their salaries and wages. The amounts deducted accordingly from salaries and wages and paid over to the organizations named, together with certain subscriptions known to have been made by employees

directly to these interests, equaled at least the sum of \$2,825,000.

#### Increases in Wages

"During the period of the European war eight general increases in wage rates were made. These increases, stated in percentages on basis of rates paid for common labor, were as follows:

Date of Increase	Percentage of Increase	Cumulative Percentage of Increase Compared with Rates Paid in January, 1915
Feb. 1, 1916	10	10
May 1, 1916	13.6	25
Dec. 15, 1916	10	37.5
Mar. 1, 1917	9	50
Oct. 1, 1917	10	65
April 15, 1918	15	90
August 1, 1918	10.5	110
Oct. 1, 1918 (see explanation below)	10	131

"The percentage of increase stated for Oct. 1, 1918, is that attaching to employees working 10 hours per day. For those working a longer number of hours the percentage of increase was greater. This arises from the adoption in nearly all departments of the basic 8-hr. day, Oct. 1, 1918, and the payment of increased rates for overtime service, the employees generally continuing after the adoption of this plan to work the same number of hours as theretofore.

"The wage increases to common labor as above stated extended in substantially the same degree to other classes of employees, except to the higher paid wage earners and salaried employees. The general average increase in the earnings per employee per day in December, 1918, compared with the year 1914, was as follows:

Average for	Dec., 1918	Year 1914	Percentage of Increase
All employees except administrative and selling	\$6.23	\$2.88	116
Total employees including administrative and selling	6.26	2.97	111

"The average number of employees in each of the past five years and the total payroll of the organization were as follows:

	Average Number Employees	Total Payroll	Average Annual Earnings per Employee
1914	179,353	\$162,379,907	\$905
1915	191,126	176,800,864	925
1916	252,688	263,385,502	1,042
1917	268,058	347,370,400	1,296
1918	268,710	452,663,524	1,685
To month of December, 1918			1,950

"The demands upon the entire personnel of the organization in every department during the period of the war were extraordinary and exacting. All were zealous and loyal in the discharge of their respective duties under conditions which at times were trying, but were assumed from a desire to assist in the effort to win the war. The board takes pleasure in acknowledging to the officers and employees of the corporation and the several subsidiary companies the efficient and loyal services rendered by them to the corporation and to the country."

The Inventors' Association, Worcester, Mass., held an organization meeting on March 27 in the rooms of the Massachusetts School of Engineering and elected the following officers: Edward J. Carberry, president; Alfred H. Wilcox, vice-president; Edward F. Jones, second vice-president; William E. Baff, secretary; R. H. Osborn, treasurer. Committees are to be appointed on patentability, practicability, publicity, membership, sales, promotion, etc.

The open-hearth steel department of the Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa., has suspended operations because of lack of orders. The works has been one of the leading shell producers in central Pennsylvania, and one of the earliest to take up that line of manufacture.

The Columbus Chain Co., Lebanon, Pa., has received a large order from the United States Government for 2 1/4-in. chain for new vessels under construction for the merchant marine service. These orders will keep the plant busy for six months.

## War Exports of Barbed Wire 1,000,000 Tons

The total of barbed wire shipped from the United States during the war, probably mostly for war purposes, runs into startling figures when viewed in the aggregate. In the last four years of the war, 1915 to 1918, inclusive, the total exports of barbed wire were 1,096,055 gross tons or 2,455,165,802 lb., the official data being expressed in pounds. The amount shipped during the war, obtained by adding the five months of 1914 and deducting the last two months of 1918 to the foregoing total, makes the total exports 1,107,920 gross tons from Aug. 1, 1914, to Nov. 1, 1918. The following table gives the details of these exports:

Exports of Barbed Wire for the United States in Gross Tons	Gross Tons
Year	
1913	82,050
1914	93,847
1915	248,619
1916	418,882
1917	193,470
1918	235,084

War Exports	
August to December, 1914 (estimated)	39,100
January, 1915, to Nov. 1, 1918	1,068,820
Total	1,107,920

The climax in this export movement was reached in 1916 when the outgo averaged 34,907 tons per month. This compares with a pre-war record of 6837 tons per month in 1913.

France, Italy and the United Kingdom absorbed the major portion of the 1918 exports. France received 113,270 tons of the total; Italy, 73,243 tons and the United Kingdom, 20,021 tons. In 1916, Russia in Europe took 89,772 tons but none in 1918. The United Kingdom received more barbed wire in 1918 than in any other year.

It is interesting to compare this outgo from the United States with that from Great Britain in corresponding years. The following table gives the British official exports of barbed wire in gross tons in the last six years:

Year	Gross Tons
1913	60,532
1914	53,085
1915	36,600
1916	4,411
1917	8,730
1918	152

This makes a total war export of 72,018 tons from Aug. 1, 1914, to the end of 1918, and compares with the over 1,000,000 tons from the United States. It is probable that the British data do not give the actual war exports.

#### Exports of Tin Plate and Terne-Plate

WASHINGTON, April 1.—The Bureau of Foreign and Domestic Commerce has compiled the following statistics of the exports from the United States of tin plate, terne-plate and taggers tin, by countries of destination, for January, 1919:

	Pounds	Dollars
France	143,539	6,298
Greece	541,000	41,450
Italy	287,367	22,984
Portugal	448,850	42,500
Sweden	18,588	12,910
Canada	9,892,261	772,236
Mexico	963,643	87,259
Trinidad	133	18
Cuba	924,351	96,393
French West Indies	45,000	5,225
Argentina	23,357,488	2,243,685
Bolivia	153,866	13,454
Brazil	6,248,288	622,667
Chile	687,605	83,910
Colombia	564	55
Ecuador	12,442	1,372
British Guiana	43,250	5,012
Dutch Guiana	2,140	260
Paraguay	608,308	44,427
Peru	502,099	41,157
Uruguay	12,821,033	1,020,312
Venezuela	2,782	135
China	2,539,913	221,070
Dutch East Indies	1,672,553	153,418
Hongkong	2,668,115	213,195
Japan	1,185,637	130,497
Australia	1,150	276
Philippine Islands	80,000	11,000
Madagascar	2,500	250
Total	65,854,465	5,893,425



# Iron and Steel Exports Show Increase

Value Larger Than a Year Ago—Tonnage for February Declines from January — Decided Change in Character of Movement — Imports Are Light

WASHINGTON, April 1.—Exports of the manufacturers of iron and steel in February showed an increase of \$10,000,000 over the February exports a year ago. This increase is important because the January figures had revealed a \$12,000,000 decline as compared with January, 1918. The total exports of the manufacturers of iron and steel in February, 1919, were valued at \$87,841,600 against \$77,918,447 in February, 1918, according to the figures compiled by the Bureau of Foreign and Domestic Commerce. The January total was

Imports of Iron and Steel

	February		Eight Months	
	1918 Gross Tons	1919 Gross Tons	1918 Gross Tons	1919 Gross Tons
Ferromanganese .....	1,417	2,620	17,252	12,164
Ferrosilicon .....	238	102	4,836	5,262
All other pig iron .....	1,780	388	15,978	610
Scrap .....	4,934	4,681	51,725	56,978
Bar iron .....	400	518	2,110	1,201
Structural iron and steel	117	156	6,658	2,167
Steel billets without al-				
loys .....	2,450	1,901	28,328	21,646
All other steel billets...	221	330	5,824	4,144
Steel rails .....	33	1,090	6,376	7,355
Sheets and plates .....	609	32	1,627	428
Tin and terne plates...	32	....	32	....
Tin scrap .....	431	483	5,643	4,825
Wire rods .....	271	....	1,434	1,929
Total .....	12,933	11,211	147,823	118,720

Imports of Manganese Ore and Oxide

Manganese Ore and oxide of .....	56,289	21,819	412,418	315,790
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\$81,853,648. In comparing the February figures with those for January, it is important to remember that the February exports cover only 28 days while the January figures represent the totals for 31 days.

For the eight months ended with February, 1919, the exports of iron and steel aggregated \$686,154,668 against \$778,095,632 in the same period a year ago. The total exports from the United States during these periods reported a decided increase for the current year. The reason that the iron and steel exports do not reveal the same increase is due to the fact that these products were favored during the war period and therefore do not now reveal a comparative improvement.

Based on statistics of tonnage instead of valuation, the February exports were decidedly below those of February, 1918. The tonnage figures for February, 1919, were 234,793 gross tons, while in February, 1918, they were 440,532 gross tons. For the eight months' period ended with February, 1919, they were 3,573,523 gross tons against 3,994,571 gross tons for the same period a year ago. The entire slump in February can be accounted for in the drop of billets, ingots and blooms, which fell from 173,272 gross tons in February, 1918, to 10,407 tons in February, 1919. Steel bars also declined from 63,479 gross tons in February, 1918, to 36,266 tons in February, 1919; wire rods slumped from 11,799 gross tons to 9,391 tons; and cast-iron pipes and fittings from 6,706 gross tons to 3,863.

Steel rails showed an increase from 35,586 gross tons in February, 1918, to 66,900 tons in February, 1919. Of this exportation of rails, 49,400 tons went to France at a valuation of \$4,847,312.

The exportation of steel plates rose from 27,686 gross tons to 44,917. Of the latter figure, 19,899 tons were sent to Canada, 11,822 to Japan and 5,939 to France. The exportation of steel sheets showed a slight decline from 14,565 gross tons in February, 1918, to 13,528 in February, 1919. Of the February exports, 5,914 tons went to Canada and 1,754 to Japan. The figures for galvanized sheets and plates remained practically stationary, being 6,165 gross tons in February, 1918, and 6,304 tons in February, 1919. Of the latter

total, 2,029 tons were sent to Australia, 1,159 to Canada, and 470 to Argentine.

The outgo of structural iron and steel jumped from 18,680 gross tons a year ago to 34,225 in February, 1919. In this year's figures there were included 11,886 tons to Canada, 6,991 to Japan, and 5,911 tons to France.

Of the tin and terneplate exports of 19,828 gross tons in February, 1919—compared with 18,564 tons a year ago—4,069 tons were sent to Argentine, 3,389 to Brazil, 3,409 to Canada, and 2,114 to Japan.

The barbed wire exports reveal an interesting study in the speed of adjustment from war times to peace. In February, 1918, 6,282 gross tons were exported, of which 3,308 tons were sent to France. This year the total for February is 6,360 gross tons—within 80 tons of last year's figures—but none of it went to France.

Under the heading "all other wire," 11,639 gross tons were exported in February, 1918, and 13,845 in February of this year. Of the latter, 2,747 tons went to the Argentine, 1,653 to Brazil, and 1,586 to Japan.

The pig iron exports in February, 1919, kept pace with the general increase. They aggregated \$32,534,116 against \$18,039,364 a year ago. For the eight months period ended February, 1919, they were \$206,045,826 against \$189,902,943 a year ago.

The exports of gasoline engines, which includes automobiles, jumped a round million dollars, from \$1,836,900 in February, 1918, to \$2,871,224 in February, 1919. The record for steam engines was \$2,820,599 in February, 1918, and \$2,744,539 in February, 1919. This included 33 locomotives, valued at \$1,126,385, which were sent to France, and 21 to Italy, valued at \$962,650.

The export of metal-working machinery of all kinds more than doubled in February, 1918, being \$3,108,431

Exports of Iron and Steel

	February		Eight Months	
	1918 Gross Tons	1919 Gross Tons	1918 Gross Tons	1919 Gross Tons
Ferromanganese .....	632	66	3,513	1,115
Ferrosilicon .....	592	596	6,248	3,969
All other pig iron .....	9,316	20,178	297,446	224,261
Scrap .....	310	217	21,499	1,401
Bar iron .....	5,003	9,726	36,016	58,797
Wire rods .....	11,799	9,391	138,019	98,418
Steel bars .....	63,579	36,266	421,565	316,243
Billets, ingots and blooms, n.e.s. ....	173,272	10,407	1,358,519	825,751
Bolts and nuts .....	2,086	3,640	21,474	23,694
Hoops and bands .....	4,509	7,001	40,828	38,449
Horseshoes .....	189	175	7,727	1,127
Cut nails .....	233	457	3,182	2,341
Wire nails .....	8,699	10,232	85,396	55,089
All other nails, including tacks .....	748	2,037	9,850	10,961
Cast-iron pipes and fittings .....	6,706	3,863	56,759	23,747
Wrought pipes and fittings .....	8,157	18,910	75,854	70,618
Radiators and cast-iron house-heating boilers...	128	139	2,208	2,276
Railroad spikes .....	367	1,878	11,300	8,089
Steel rails .....	35,586	66,900	289,717	373,091
Galvanized sheets and plates .....	6,165	6,304	54,263	43,627
All other sheets and plates .....	3,165	3,030	39,209	205,279
Steel plates .....	27,686	44,917	320,165	440,342
Steel sheets .....	14,565	13,528	113,774	100,719
Ship plates, punched and shaped .....	1,875	1,066	22,454	15,765
Structural iron and steel .....	18,680	34,225	171,492	183,707
Tin and terne plates....	18,564	19,828	143,848	162,111
Barbed wire .....	6,282	6,360	117,620	163,671
All other wire .....	11,639	13,845	122,626	110,906
Total .....	440,532	234,793	3,994,571	3,573,523

and in February, 1919, \$6,400,717. The latter total included an exportation of \$2,641,612 to the United Kingdom, \$1,530,345 to France, and \$775,336 to Japan.

The exportation of sewing machines jumped from \$512,997 in February, 1918, to \$1,168,635 in February, 1919; sugar mill machinery rose from \$751,269 in February, 1918, to \$1,358,767 in February, 1919; textile ma-

Exports of Machinery	February		Eight Months	
	1918	1919	1918	1919
Adding machines	\$133,981	\$515,392	\$1,462,002	\$1,816,135
Air-compressing machinery	92,277	254,312	875,277	2,092,833
Brewers' machinery	4,975	.....	214,918	59,049
Cash registers	42,249	173,782	344,443	878,980
Parts of	932	12,578	44,172	97,680
Concrete mixers	7,853	11,530	191,012	183,874
Cotton gins	12,049	59,290	82,076	134,925
Cream separators	50,339	91,833	235,810	580,903
Elevators and elevator machinery	138,436	193,098	1,374,121	1,727,718
Electric locomotives	3,030	43,337	105,679	187,765
Gas engines, stationary	52,803	50,814	444,319	366,616
Gasoline engines	1,836,900	2,871,224	18,102,705	22,956,885
Kerosene engines	336,915	642,026	2,849,611	6,324,165
Steam engines	2,820,599	2,744,539	28,829,285	18,860,551
All other engines	402,252	219,970	1,615,133	3,871,497
Boilers	104,077	423,175	2,785,358	3,824,838
Boiler tubes	319,101	912,026	4,528,252	5,272,802
All other parts of engines	964,467	2,411,558	10,924,356	17,364,339
Excavating machinery	36,012	91,916	616,597	651,171
Milling machinery, flour and grist	105,066	138,816	617,353	945,800
Laundry machinery, power	39,376	97,208	256,251	308,014
All other	11,894	37,741	194,274	209,403
Lawn mowers	2,694	31,874	157,052	208,581
Metal-working machinery (including wood-working tools)	592,398	1,065,046	12,125,078	5,896,169
Lathes	752,355	1,548,406	7,259,966	8,375,278
Other machine tools	328,879	889,096	4,279,216	4,099,175
Sharpening and grinding machines	1,434,799	2,898,169	16,869,546	16,633,786
All other metal-working machinery	34,966	44,207	331,479	373,976
Meters, gas and water	88,905	398,041	1,321,887	2,300,404
Mining machinery, oil well	838,696	1,070,717	7,018,617	5,971,025
All other	89,738	168,360	1,271,465	1,322,979
Paper mill machinery	51,862	409,196	944,094	1,470,106
Printing presses	424,227	711,450	4,434,010	4,238,635
Pumps and pumping machinery	112,359	197,085	996,460	1,249,563
Refrigerating and ice-making machinery	34,707	37,518	309,812	486,704
Road-making machinery	512,997	1,168,635	5,575,013	7,042,013
Sewing machines	68,578	237,922	1,112,686	1,154,939
Shoe machinery	751,269	1,358,767	9,619,545	7,765,355
Sugar-mill machinery	471,023	1,232,318	3,278,757	6,344,020
Textile machinery	42,155	448,477	807,053	1,420,556
Typesetting machines	518,116	1,134,079	5,179,730	5,603,753
Typewriting machines	63,576	91,949	838,800	626,335
Windmills	88,794	199,418	622,500	1,010,533
Wood-working machinery, saw mill	71,636	102,938	705,473	790,398
All other	3,052,080	5,094,283	28,051,790	32,975,600
All other machinery and parts of	.....	.....	.....	.....
Total	\$18,039,364	\$32,534,116	\$189,902,943	\$206,045,826

chinery from \$471,023 in February, 1918, to \$1,232,318 in February, 1919; shoe machinery from \$68,578 to \$237,922; typesetting machines from \$42,155 to \$448,477, and typewriters from \$518,116 to \$1,134,079. Of the latter total, typewriters valued at \$200,924 were sent to France.

The exportation of iron ore from the United States was 1,994 gross tons in February, 1918, and 3,528 in February, 1919. The importation of iron ore in February, 1918, was 15,743 gross tons and in February, 1919, 28,039, of which 25,092 tons came from Cuba.

The imports of iron and steel into the United States for February, 1919, were valued at \$2,061,705 against \$1,752,136 a year ago. For the eight months ended with February, 1919, they totaled \$16,779,209 against \$15,859,196 a year ago.

The importation of machinery in February, 1919, was \$453,991 against \$220,575 in February, 1918. For the eight months' period ended with February, 1919, these figures were \$3,732,272, and in the same period a year ago they were \$1,801,867.

The tonnage of imports of iron and steel showed a slight decrease from 12,933 gross tons in February, 1918, to 11,211 tons in February, 1919. For the eight months ending with February, 1918, they were 147,823 gross tons and in the same period this year they were 118,720 tons.

The importation of manganese ore and oxide of manganese dropped heavily. In February, 1918, there were imported 56,289 tons valued at \$1,336,535, while in February, 1919, these imports fell to 21,819 tons valued at \$624,025.

O. F. S.

## The Automobile Industry in Germany

WASHINGTON, April 1.—Probably because it was written before the present increase in Bolshevik disturbances in Germany, a special report on the industrial situation in Germany written by Trade Commissioner Norman L. Anderson finds the German industrialists apparently in a hopeful mood. He even reports the conditions in the manufacture of small iron articles as "more or less favorable." His comment devoted to a consideration of the automobile industry also is interesting.

"As peace approaches," writes Commissioner Anderson, "the important question discussed by German industry is how far the crisis through which it has passed as a result of the war will affect development in the first years after the signing of peace. The German press contains much interesting information regarding the situation in individual lines of German industry and in the future opened to them.

"The difficulties of war times have affected the automobile industry only very slightly. Nearly all companies have greatly increased their production and their equipment. The typical factor in this industry has been that during the war, owing to excess of demand over supply, the manufacturers have not been

concerned with the finding of markets, as a result of which production has been intensive.

"A measure of the increase of motor and automobile producing capacity during the war is clearly illustrated by the figures given in the German press of the increase of capital of the share companies concerned in that production. Thus the share companies Daimler and Bayersche Motorwerke A-G during the past two years have increased their capitalization by 15,000,000 marks. A considerable increase in the working capital is also noticed in other large undertakings, as, for example, Nationale Automobile Gesellschaft and Hansa Lloyd, the latter of which has increased its capitalization from 4,400,000 to 20,000,000 marks. The unprecedented flow of money into this industry is remarked on by the German press as an indication not seen in other lines."

The Firth-Sterling Steel Co., McKeesport, Pa., which has been handling the sale of its products direct in New York and Boston since Jan. 1, is now operating its own warehouses in the two cities. The Boston warehouse is located at 35 Oliver Street, and that in New York is at 310-314 Hudson Street. At both the Firth-Sterling Steel Co. will carry stocks of Blue Chip, high-speed and other Firth-Sterling tool steels, as well as its stainless steel.

## PIG IRON PRODUCTION

**Last Half of 1918 Shows Large Increase—Total Exceeds That of 1917**

The American Iron and Steel Institute has issued a statistical bulletin showing the production of pig iron in the United States for 1918, the total of all kinds being 39,051,991 gross tons compared with 38,621,216 tons in 1917 and 39,434,797 tons in the record year 1916. The production in the second half of 1917 was only 30,927 tons more than in the first half, but in the second half of 1918 the production was 20,824,261 tons, or, 2,596,522 tons more than in the first half. The production in the first half of 1918 was 18,227,730 tons, or 1,022,505 tons less than in the first half of 1917. The decreased production in the first half of last year was due to the extremely cold weather and snow which prevailed early in the year. Had it not been for influenza, which prevailed during a number of weeks of the last half of the year, the record for the last half of 1918 would undoubtedly have been considerably better.

The increase in production in 1918 as compared with 1917 was only 1.12 per cent, but it extended to all grades except Bessemer and low phosphorus, which declined 5.03 per cent, and foundry and ferrosilicon, which declined 3.48 per cent. The largest increase was 47.09 per cent in spiegeleisen and 28.03 per cent in ferromanganese.

The accompanying chart, which is based on the institute's figures, shows the production of pig iron by grades for the past 19 years.

### Chicago Basing Point Favored

The efforts of the Western Association of Rolled Steel Consumers to re-establish the "Chicago base" for prices of steel were indorsed by the St. Louis Purchasing Agents' Association at its March meeting, following an address by Frank Emerich of Chicago on the benefits that would accrue to the St. Louis buyers of steel through the accomplishment of the purpose of the campaign.

"St. Louis and Southwestern buyers could obtain cheaper steel if Chicago were made the price base, because steel is manufactured more cheaply at Gary, Ind., than at any other point in America," Mr. Emerich said. "There are three reasons for this. First, the manufacturers at Gary have more easy access to the raw materials than the manufacturers at Pittsburgh. The coal fields of Illinois and Indiana are the largest in the country. Eighty-five per cent of the iron ore mined in the United States comes from the shores of Lake Superior.

"Transportation is another important item to be considered. Iron ore can be laid down much cheaper at Gary than at Pittsburgh. The Gary steel manufacturers have the most efficient plants in the country. Finally, Gary has better distributing facilities for the finished product.

"If the Chicago base were re-established, steel construction would be greatly stimulated, as the cost of such construction would be reduced about 7½ per cent.

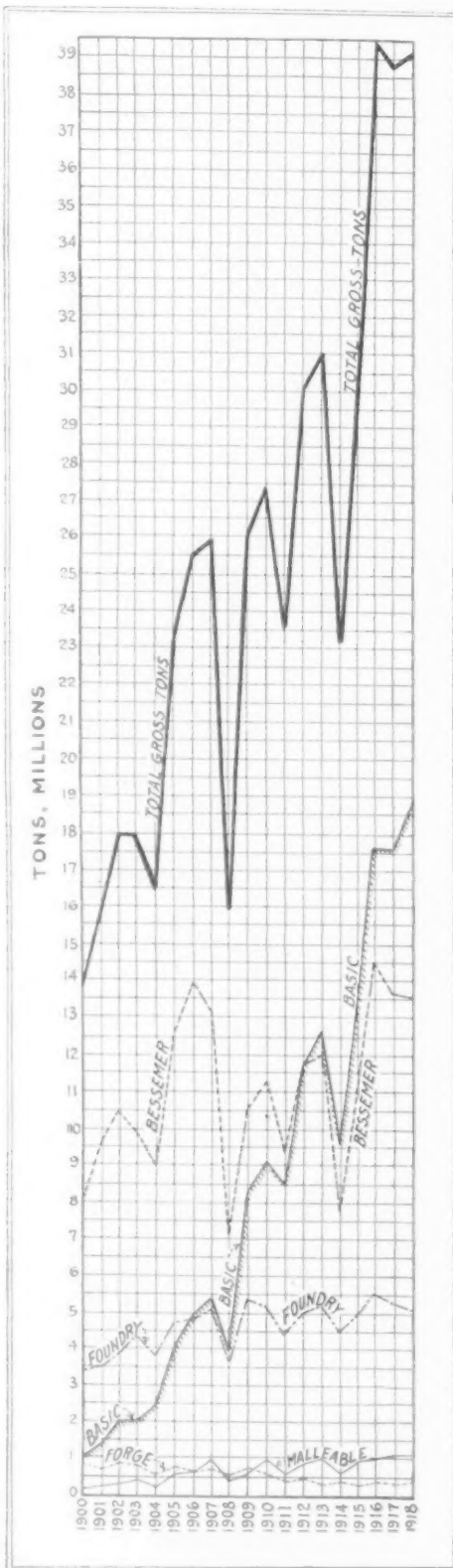
"St. Louis fabricators pay 7 per cent more for steel bought at Pittsburgh than they would if Chicago were the price base. Steel will be the all-important factor in the upbuilding of the world during this reconstruction period, and because of the Pittsburgh base the Eastern steel companies will be in a position to quote lower prices to European buyers than can St. Louis manufacturers.

"Pittsburgh also has a monopoly on the Oriental steel trade, because you can ship steel from Pittsburgh to the Pacific cheaper than from St. Louis to the Pacific. If the Chicago base were re-established, it would mean cheaper steel for this district and the Southwest could compete with Pittsburgh for the Oriental trade."

### France Wins Judgment

Judgment in the sum of \$55,844.18 was rendered by the Federal Court at Indianapolis in favor of the Republic of France against the Kokomo Steel & Wire Co., Kokomo, Ind., for alleged breach of contract. The plaintiff alleged that in August, 1915, through its authorized agents, J. P. Morgan & Co., it entered into a contract with the defendant company to furnish 3000 tons of barbed wire at \$2.98 per 100 lb., to be delivered as nearly as possible on Oct. 21, free along side steamers in New York harbor, the plaintiff to have the right to accept and pay for any deliveries after that date at the stipulated price. After Jan. 1, 1917, deliveries ceased, it was alleged, with 5,281,514 lb. undelivered and the market price then \$3.70 per 100 lb. Judgment, including interest, of \$60,000 was asked. The defendant company maintained that it made deliveries until Dec. 31, 1916, but the plaintiff failed to observe a stipulation in the contract that the payment should be made for each delivery within five days after bills of lading, invoices and other shipping data were received by the agents of the plaintiff; that after repeatedly attempting to obtain recognition of this clause of the contract, it declined to make further delivery.

The Hydro Electric Power Commission of Ontario, Canada, has placed an order with the Westinghouse Electric & Mfg. Co. for two 45,000-kva. vertical water-wheel generators of 12,000 volts, 3 phase, 25 cycles, for its Queenstown development.





# PRODUCTION OF PIG IRON IN THE UNITED STATES IN 1918

(From special statistical bulletin No. 1 of the American Iron and Steel Institute)

PRODUCTION OF PIG IRON BY STATES, 1914-1918.

States	1914.	1915.	1916.	1917.	1918.
Mass. Conn.	6,594	7,802	5,719	10,527	11,485
New York	1,559,864	2,104,780	2,352,535	2,417,527	2,871,118
New Jersey	9,733,369	12,790,668	16,506,284	15,539,728	15,198,271
Pennsylvania	195,594	251,548	501,452	422,212	373,817
Maryland	271,228	251,346	399,885	520,311	513,737
Virginia	1,826,929	2,049,453	2,762,885	2,953,705	2,587,852
Alabama	236,393	291,040	554,590	561,951	594,675
West Virginia	216,738	177,729	355,374	369,951	369,822
Kentucky	5,283,426	6,912,962	8,602,895	8,518,603	8,764,132
Georgia	1,847,451	2,447,220	3,922,512	3,456,915	3,440,307
Mississippi	1,557,355	1,986,778	2,221,708	2,657,503	3,073,599
Tennessee	329,526	372,966	811,325	738,541	750,366
Illinois	267,777	271,921	437,633	453,742	502,810
Indiana, Michigan					
Wisconsin, Minnesota					
Missouri, Iowa, Cal.					
Washington, Oregon					
Total	23,332,244	29,916,213	39,434,797	38,621,216	39,051,991

HALF-YEARLY PRODUCTION OF ALL KINDS OF PIG IRON.

States	Blast furnaces.			Production—Gross tons.		
	December 31, 1918.			(Includes spiegeleisen, ferro-mang., ferro-silicon, ferro-phosphorus, etc.)		
	In blast June 30, 1918.	In.	Out.	Total.	First half of 1918.	Second half of 1918.
Massachusetts	1	1	1	2	5,470	6,015
Connecticut	2	2	0	2		
New York	24	23	4	27	1,339,472	1,531,646
New Jersey	4	3	2	5	7,121,903	8,076,368
Pennsylvania	137	127	38	165	174,408	199,409
Maryland	4	3	2	5	263,676	250,061
Virginia	13	13	6	19	1,286,571	1,301,281
Alabama	31	30	16	46	264,151	330,524
Georgia	0	0	4	4		
Texas	0	0	2	2		
West Virginia	0	0	4	4		
Kentucky	5	5	2	7		
Mississippi	0	0	1	1		
Tennessee	12	9	6	15	189,978	179,844
Ohio	71	74	5	79	4,059,603	4,704,529
Illinois	24	23	2	25	1,505,113	1,935,194
Indiana	15	16	0	16	1,402,667	1,670,932
Michigan	11	12	2	14	368,469	381,897
Wisconsin	4	5	3	8		
Minnesota	3	3	0	3		
Missouri	2	2	0	2		
Iowa	0	0	0	0		
Colorado	4	3	3	6	246,249	256,561
Oregon	0	0	1	1		
Washington	1	1	0	1		
California	0	0	0	0		
Total	371	359	100	459	18,227,730	20,824,261

PRODUCTION OF PIG IRON BY GRADES, 1900-1918.

Years	Basic	Bessemer	Foundry	Malleable	Forge	All other	Total Gross tons.
1900	1,972,376	7,979,327	3,376,445	173,413	793,062	394,589	13,789,242
1901	1,448,850	9,596,793	3,548,718	256,532	639,454	388,067	15,878,354
1902	2,038,590	10,393,168	3,851,276	311,458	830,093	393,722	17,821,307
1903	2,040,726	9,089,908	4,409,023	473,781	783,016	512,798	18,009,252
1904	2,483,104	9,098,659	3,827,229	263,529	550,836	273,676	16,497,033
1905	4,105,179	12,407,116	4,758,038	635,236	727,817	358,994	22,992,380
1906	5,015,674	13,840,518	4,773,011	699,701	597,420	377,867	25,307,191
1907	5,575,219	13,231,620	5,151,209	920,290	683,167	419,856	25,781,361
1908	4,010,144	7,216,976	3,637,622	414,957	457,164	199,155	15,936,018
1909	5,575,219	10,557,370	5,322,415	658,048	725,624	281,789	25,795,471
1910	6,250,225	10,557,370	5,260,447	843,123	564,157	305,590	27,303,567
1911	6,084,698	11,245,642	5,260,447	843,123	564,157	305,590	27,303,567
1912	8,320,020	9,409,303	4,468,940	612,533	408,841	229,910	23,649,547
1913	11,417,886	11,664,015	5,073,873	825,643	469,183	276,337	29,726,937
1914	12,530,693	11,590,113	5,220,343	993,736	324,407	390,860	30,966,152
1915	9,870,687	7,859,127	4,533,254	671,771	361,651	235,754	23,332,244
1916	11,093,214	10,523,306	4,843,899	829,921	316,214	309,659	29,916,213
1917	17,684,087	14,422,457	5,553,644	921,486	348,344	504,779	39,434,797
1918	17,671,692	13,714,732	5,328,258	1,015,579	345,707	545,278	38,621,216
1919	18,646,174	13,024,966	5,142,607	1,117,914	393,932	726,398	39,051,991

PIG IRON MADE FOR SALE OR FOR USE OF MAKERS IN 1918.

Grades	For sale.	For maker's use.	Total Gross tons.
Basic	2,401,476	16,244,698	18,646,174
Bessemer and low-phosphorus	1,703,801	11,321,165	13,024,966
Foundry, including ferro-silicon	4,959,502	183,105	5,142,607
Malleable	1,117,914		1,117,914
Forge or mill	197,654	196,278	393,932
Ferro-manganese	159,640	173,387	333,027
Spiegeleisen	161,147	122,706	283,853
All other grades	64,753	44,765	109,518
Total			
Gross tons	10,765,887	28,286,104	39,051,991

HALF-YEARLY PRODUCTION OF BASIC PIG IRON.

States	First half of 1918.	Second half of 1918.	Total, 1918.
New York, New Jersey	658,750	687,646	1,346,396
Pennsylvania—Allegheny County	1,694,024	1,821,725	3,515,749
Other counties	2,157,676	2,651,855	4,809,531
Virginia, Alabama, Kentucky	625,019	706,433	1,331,452
Ohio	1,544,630	1,816,051	3,360,681
Indiana, Illinois	1,617,829	2,015,488	3,633,317
Michigan, Minnesota, Missouri, Colorado	319,764	329,584	649,348
Washington, California			
Total	8,617,692	10,028,482	18,646,174

HALF-YEARLY PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON.

States	First half of 1918.	Second half of 1918.	Total, 1918.
New York, New Jersey	193,063	211,553	404,616
Pennsylvania	2,603,066	2,706,958	5,310,024
Maryland	170,153	195,921	366,074
West Virginia, Kentucky, Tennessee, Ala.	201,726	306,196	507,922
Indiana, Illinois, Wisconsin, Colorado	1,897,869	2,347,132	4,245,001
Ohio	940,730	1,259,599	2,194,329
Total	6,006,607	7,018,359	13,024,966

HALF-YEARLY PRODUCTION OF FOUNDRY PIG IRON AND FERRO-SILICON.

States	First half of 1918.	Second half of 1918.	Total, 1918.
Massachusetts, Connecticut	5,410	5,890	11,300
New York, New Jersey	380,391	448,434	828,824
Pennsylvania	310,499	445,345	755,844
Maryland, Virginia, West Virginia	256,389	233,542	489,931
Georgia, Kentucky	27,957	34,158	62,115
Tennessee	171,409	152,247	323,656
Alabama	592,581	576,542	1,169,123
Ohio	327,570	332,631	660,201
Indiana, Illinois	26,281	27,385	53,666
Michigan	178,781	177,288	356,069
Wisconsin	140,548	135,650	276,198
Minnesota, Missouri, Iowa, Colorado, California, Washington	70,905	54,775	125,680
Total	2,518,721	2,623,886	5,142,607

HALF-YEARLY PRODUCTION OF MALLEABLE PIG IRON.

States	First half of 1918.	Second half of 1918.	Total, 1918.
New York	80,745	117,886	198,631
Pennsylvania	62,797	56,098	118,895
Ohio	212,567	175,945	388,512
Alabama, Illinois, Michigan, Wis., Mo.	251,209	160,667	411,876
Total	607,318	510,596	1,117,914

HALF-YEARLY PRODUCTION OF FORGE PIG IRON.

States	First half of 1918.	Second half of 1918.	Total, 1918.
New Jersey	7,629	29,103	36,732
Pennsylvania	74,457	105,961	180,418
Virginia		841	841
Tennessee	1,213	3,481	4,694
Alabama	42,621	31,272	73,893
Ohio	72,316	25,638	97,954
Total	197,636	196,296	393,932

HALF-YEARLY PRODUCTION OF SPIEGELEISEN AND FERRO-MANGANESE.

States	First half of 1918.	Second half of 1918.	Total, 1918.
New York, New Jersey, Pennsylvania	190,831	396,614	497,445
Virginia, Alabama	24,062	39,321	63,383
Ill., Colorado, Wash., Oregon, Cal.	22,335	33,717	56,052
Total	237,228	469,652	706,880

\* 333,027 tons ferro-manganese and 283,853 tons spiegeleisen.

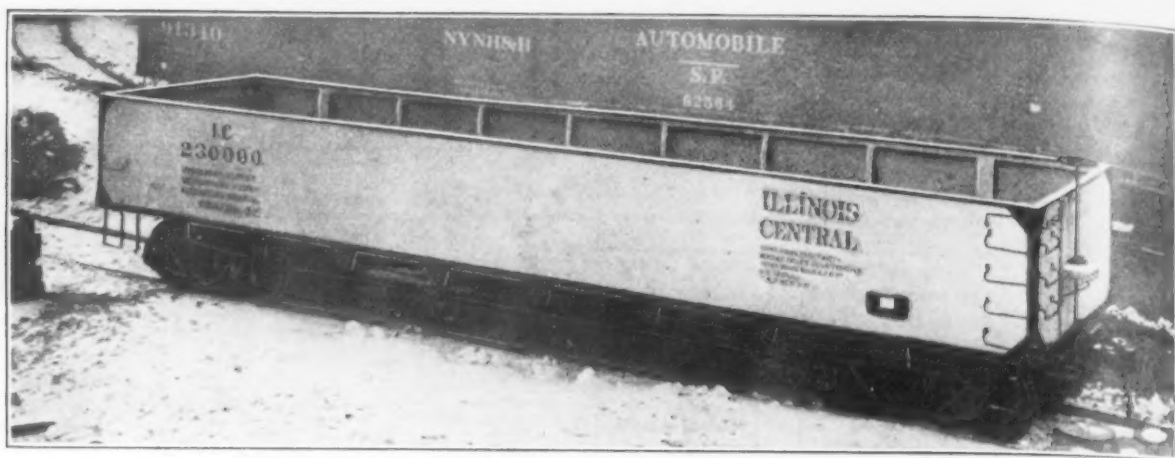
HALF-YEARLY PRODUCTION OF OTHER GRADES.

States	First half of 1918.	Second half of 1918.	Total, 1918.
Conn., New York, New Jersey	8,076	8,166	16,242
Pennsylvania	9,431	11,096	20,527
Mo., Va., W. Va., Ky., Tenn., Ala.	17,090	30,410	47,500
Ohio	4,651	7,132	11,783
Indiana, Ill., Mich., Wis., Minn., Mo., Cal.	3,361	10,186	13,547
Total	42,528	66,960	109,518

PRODUCTION OF PIG IRON BY GRADES, 1917-1918, SHOWING INCREASE OR DECREASE BY GRADES.

Grades	1918.	Per cent.	1917.	Per cent.	Increase.	Per cent.
Basic	18,646,174	47.75	17,671,662	45.76	974,512	5.51
Bessemer and low-phosphorus	13,024,966	33.35	13,714,732	35.51	*689,766	*5.03
Foundry and ferro-silicon	5,142,607	13.17	5,328,258	13.80	*185,651	*3.48
Malleable	1,117,914	2.86	1,015,579	2.63	102,335	10.08
Forge	393,932	1.01	345,707	.89	48,225	13.95
Spiegeleisen	283,853	.73	192,985	.50	90,868	47.09
Ferro-manganese	333,027	.85	260,125	.67	72,902	28.03
All other	109,518	.28	92,168	.24	17,350	18.82
Total	39,051,991	100.00	38,621,216	100.00	430,775	1.12

\* Decrease.



Gondola Car with Steel Skeleton and Underframe

## CONCRETE GONDOLA CAR

### Designed to Save Steel During War—Has Steel Skeleton Body and Underframe

Joseph B. Strauss, civil engineer, Chicago, has designed a reinforced concrete gondola car just completed by the R. F. Conway Co., Chicago. The work has been under way for some time, plans having been made when it was thought that because of shortage of steel it might be possible to materially relieve the demand for more cars by developing concrete construction. The Strauss car was turned over to the Illinois Central Railroad March 17, and will be used on that line 30 days, after which it will be delivered to the United States Railroad Administration for service.

The fundamental feature of the design is a steel skeleton body marking the outer boundaries of the car. This is mounted upon a steel under frame. Concrete walls and floors are contained within this skeleton steel frame and together with the reinforcement in the floor are connected to and interlocked with the under frame in such a manner that the draw bar pull is distributed throughout the car body without overstressing the car. The skeleton frame, in addition to forming finishing and protecting edges, serves also in carrying stresses. Plans for commercial production have been so improved that future cars will represent reduction in weight, simplification of manufacture and lower cost.

This car was designed in accordance with the United States Railroad Administration standards as a 100,000-

lb. capacity coal car, plus 10 per cent for overload. The draw bar pull was taken at 200,000 lb. The unit stress in steel is 16,000 lb., and in concrete 1000 lb. The impact was computed at 25 per cent. The length of the car is 41 ft. 6½ in., and width 10 ft. 2¾ in. The sides are 4 ft. 10½ in. high. The gondola type was selected because such cars are usually submitted to the severest kind of handling in service. Dumping devices were omitted to simplify the experiment, but this feature can be incorporated without any difficulties of design and construction.

For the concrete used in this construction the first commercial application of a new lightweight aggregate known as Haydite was made. This material is a result of a manufacturing process developed by Stephen J. Hayde of Kansas City; a concrete having a weight of 104 lb. per cu. ft. resulted, having a strength of 4450 lb. compressive strength in 28-day tests.

Because the concrete sections on this car are thinner than ever before attempted in such work, it was decided to use a cement gun for the walls and floor. The cross-bearers were poured in the usual manner. Forms were placed on the outside of the car and concrete shot from the interior. The resulting concrete is exceedingly dense and the finish smooth on the surface which was against the forms. This car was built with the sanction and co-operation of the United States Railroad Administration.

In leading up to the construction of this car the Concrete Car Co. of America was organized with J. J. McCarthy, president R. F. Conway Co. of Chicago, Joseph B. Strauss and F. E. Sullivan, Chicago, as principals.

### Improvement in Strength of Malleable Castings

The American Malleable Castings Association, 1900 Euclid Building, Cleveland, has issued a 28-page booklet, 5½ x 8 in., having the title Malleable Iron, in which a great deal of information on the history, properties, uses and strength of malleable castings is set forth. The contents of the book, which is fully illustrated, include:

What is malleable iron? The American Malleable Castings Association. The uses of the malleable iron casting. Can heavy sections of malleable iron be completely annealed? The skin of a malleable casting, and malleable iron castings resist rust.

The work of the association to perfect the art of making malleable castings is reviewed, and a detailed account given of test requirements. Referring to tests for tensile strength and elongation of standard ¾-in. test bars in the plants of the members of the association, the booklet says:

"In November, 1915, of all the bars submitted for test 5.79 per cent failed to reach 40,000 lb. per sq. in., tensile, while only 4.18 per cent of all the bars exceeded 52,000 lb. In December, 1918, the latest figures available at this writing, only 0.25 of 1 per cent fell below 40,000 lb., 97.54 per cent exceeded 44,000 lb. and 39 per cent tested over 52,000 lb. per sq. in., with an average

elongation of 14.38 per cent in 2 in. These last figures give the result of tests made on 1257 bars.

"To further illustrate what is possible of accomplishment, we give herewith the record of a run of 24 successive heats.

First Lot—Twelve Bars	
Average ultimate strength, lb.	54,490
Average elongation, per cent.	22.81
Second Lot—Six Bars	
Average ultimate strength, lb.	54,920
Average elongation, per cent.	18.12
Third Lot—Six Bars	
Average ultimate strength, lb.	57,371
Average elongation, per cent.	23.83

"In June, 1918, the American Society for Testing Materials tentatively adopted specifications for malleable iron calling for 45,000 lb. tensile strength with 7½ per cent elongation in 2 in., at the request of the malleable iron industry."

John H. Schumann, president, Hilo Varnish Corporation, Brooklyn, has announced the inauguration of a profit-sharing plan whereby half the profits will be distributed among all the employees annually. Each will receive a share proportionate to his salary or wage and the length of time his name has been on the payroll. The Hilo Varnish Corporation (formerly Moller & Schumann Co.) has been a large manufacturer of varnish over 50 years.

## Consolidation of Engineering Societies Discussed

A remarkable meeting of engineers was held in New York on the evening of March 26 at the Engineering Societies Building. Members in the New York metropolitan district from no less than eighteen societies had been invited. The meeting was arranged by the local sections of the American Institute of Mining and Metallurgical Engineers, the American Society of Mechanical Engineers and the Society of Automotive Engineers. Most of the other societies participating have no special local organization. The meeting had been called together to emphasize the desirability of co-operation among engineers and five prominent engineers had been invited to make short addresses on the topic of "The Engineer as a Citizen." Following the presentation of the papers there was an active discussion out of which grew a number of proposals looking to the desirability of a combination or a consolidation of engineering societies both from the national standpoint and from the local standpoint.

One suggestion, for example, was that there should be a merger of the present existing societies into a single national organization, or that a metropolitan association of engineers might be organized comprising the New York memberships of the various societies, or an engineering council to be composed of delegates from the New York sections or local memberships. The last proposal comprehended an informal group activity made up of the chairmen or secretaries of the various organizations, or interlocking committees in the national societies, recognizing the fact that many members are identified with more than the one organization.

The resolutions adopted were as follows in substance:

That the different local memberships appoint a delegate to attend a joint conference with a view to organizing to obtain closer co-operation among engineers whereby they may become more potent in fulfilling their responsibilities as citizens.

That societies not now having committees on development be asked to appoint such committees to make a survey of the aims and purposes of their organizations and to co-operate with the existing committees.

That the representatives of the various societies participating in the meeting recommend to their organizations that a delegate be appointed to a common engineering conference to discuss, formulate and report back to their respective bodies a code for professional conduct with a view to its adoption by all of the engineering bodies involved as a common code for the engineering profession.

The addresses were made by Philip N. Moore, consulting engineer, St. Louis; Calvert Townley, Westinghouse Electric & Mfg. Co.; Nelson P. Lewis, formerly chief engineer of the Board of Estimate and Apportionment, New York; Spencer Miller, Lidgerwood Mfg. Co., New York, and Prof. Comfort A. Adams, dean Harvard Engineering School and chairman American Engineering Standards Committee. Gano Dunn, J. G. White Co., presided.

Jesse M. Smith, consulting engineer, New York, described how the United Engineering Society, the holding organization for the founder engineering societies operating the Engineering Societies Building, provided the machinery for the proposed general engineering organization, while Mr. Moore called attention to the position being attained by the engineer in the likely early establishment of a national department of public works, under which can be correlated the different engineering functions of the United States which are now scattered under twenty-two bureaus and six cabinet officers. The engineering societies of the country, he added, have been requested to send delegates to a meeting in Chicago, April 23, 24 and 25, to discuss the plan and in Washington the idea will be more gladly welcomed than perhaps most engineers believe.

The Hawkridge Bros. Co., Boston, has been appointed New England distributor for the Pressed Metal Radiator Co., Pittsburgh, for the marketing of its gas-welded cold-drawn tubing. The Hawkridge Bros. Co. will carry a stock in its Malden and Boston warehouses.

## SELLING PLAN FOR TOOLS

Director of Sales, War Department, Builders and Dealers Agree

WASHINGTON, April 1.—Plans for the sale of the Government's stock of machine tools, both new and second-hand, are again being revised by the Director of Sales, War Department. Several conferences have been held with representatives of builders and dealers.

The latest agreement, which has not yet been put into final shape, would turn all the new machines back to the manufacturers, to be disposed of by them on a commission of 7½ per cent, at the rate of one Government machine for each machine of their own to be sold.

The contract with the dealers, if carried out, will divide the country into a series of sales districts, in each of which an exclusive agent will be selected by the Government from the ranks of machine tool dealers. He will then be allotted the machine tools in his district, for sale at a value to be fixed by appraisal. Lower prices will only be allowable if approved by the Washington authorities. Each of these dealers will also have a list of all other machine tools held by the Government and he will have the right to sell them, subject to prior sale by the agent in whose district they happen to be.

These plans were agreed upon at a conference at which the Government was represented by Col. A. LaMar, chief of machine tool section of office of Director of Sales, and Majors P. F. Goodwin and H. S. Johnson of the same office. The National Supply and Machinery Dealers' Association was represented by its secretary-treasurer, Thomas A. Fernley, and by H. W. Strong of Strong, Carlisle & Hammond Co., Cleveland. The National Machine Tool Builders' Association was represented by A. E. Newton of Reed-Prentice Co., Worcester, Mass., and W. A. Viall of Brown & Sharpe Mfg. Co., Providence, R. I.

Little progress is being made in the inventorying of the Government's stocks of machine tools. This also has had much to do with holding back the formulation of a definite sales program. It has been difficult to work out a final project, as long as the industry did not know how large the surplus would be.

The disposition of ordnance steel scrap is also still an unsolved problem. Three weeks ago the estimates of the "surplus" forgings and castings put the amount at 450,000 gross tons. Now it turns out that the accumulations are at least 900,000 tons, and there are still unadjusted contracts which may increase the total. The Ordnance Department is waiting for a report from the special committee of the American Iron and Steel Institute which was to deal with the problem. So far, however, it has offered no suggestions, nor is it likely that any final steps will be taken until the amount to be sold is more definitely known. The Ordnance Department officials insist that the amounts they hold are so well scattered that they will not materially affect prevailing market prices.

The Wallace Barnes Co., Bristol, Conn., manufacturer of springs, screw machine products and high-carbon cold rolled steel, has opened up branch sales offices at 50 East Forty-second Street, New York, and 618 Book Building, Detroit, in charge of Lisle K. Lasher and Brown Joyce respectively. Both of these managers have had years of experience in this line of manufacture.

The Perry Valley Forge, Marysville, Pa., producer of charcoal-iron blooms, has suspended operations due to the scarcity of contracts. The plant had been idle for several years previous to the war, but resumed operations with the improvement in business. Marshall Furnace, Newport, Pa., operated by the Juniata Furnace & Foundry Co., is also idle.

Further curtailment of operations at the Lebanon, Pa., plant of the Bethlehem Steel Co. has resulted in the second of the twin Colebrook furnaces going out of blast this week. This leaves the North Lebanon plant as the only one of the seven Bethlehem stacks in Lebanon County, Pa., to continue in operation.



## PIG IRON CONTRACTS

### Producers Decide That Newly Announced Prices Need Not Affect Them

The Associated Manufacturers of Merchant Pig Iron held a largely attended meeting at Pittsburgh on Wednesday, March 26, to consider questions involved in the agreement as to the reduced pig iron prices announced at Washington on March 20. Chief of these related to the status of existing contracts. There had also been considerable discussion in the trade preceding the meeting as to the maintenance of Pittsburgh and Birmingham basing points and the differentials maintained during the period of Government price regulation. The following statement was given out after the meeting:

"Pig iron manufacturers from every part of America held a meeting at the William Penn Hotel, Pittsburgh, March 26, to consider the new prices for pig iron suggested by the general committee of the American Iron and Steel Institute at its meeting with the Industrial Board of the Department of Commerce in Washington last Wednesday.

"In addition to a considerable amount of discussion with reference to the high cost of manufacture and the extent to which a large number of furnaces were being compelled to shut down as a result of the lack of business, there was some discussion by one or two of those present as to the validity of existing contracts or whether there was any understanding that the newly appointed Industrial Board of the Department of Commerce was to be regarded as having any price-fixing powers or to exercise any authority in that direction.

#### Statement from Washington

"While the organization was in session Edward F. Goltra, St. Louis, was appointed a committee of one to discuss this point, on the telephone if possible, with the board at Washington, with the result that W. M. Ritter, vice-chairman of the board in Washington, authorized the following statement:

The Industrial Board of the Department of Commerce has repeatedly stated that it was not a price-fixing body in any sense of that phrase and any prices recognized by it are not to be taken as 'Governmental fixed prices.' The object that the board has in mind is to urge all the Government departments to resume purchases at the prices which the board deems fair, after acquainting itself thoroughly with all the conditions and facts as to production costs in order to effect stability and stimulate trade to the end that business and industry can proceed and build up with confidence, as well as provide maximum employment of labor.

"Following this statement from the board, a resolution was adopted that as the Industrial Board of the Department of Commerce has at all times clearly stated that it had no authority or right by law to fix prices, the approval of the board given to the prices for iron and steel suggested by the committee of the American Iron and Steel Institute does not in any manner affect or reduce the prices or obligations fixed by contracts made prior to March 20; nor are the prices announced at or as a result of the said meeting with the Industrial Board to be construed as affecting contracts in existence before that date.

"Further resolutions were adopted pledging the producers to co-operate in every way to the limit of their ability, despite the fact that it may mean serious losses in some cases and a closing down of a large number of furnaces in other directions, as well as approving the action of Leonard Peckitt, Catasauqua, Pa., who represented the pig iron industry recently in Washington when the suggestion for changed prices was made and accepted."

The meeting took no action on the matter of basing points, though trade developments indicate that in some cases these will not be observed by Southern iron producers, particularly by Virginia furnaces in connection with their trade with New England and other Eastern foundries. Nor was any action taken on pig iron differentials. Thus far those prescribed by the American Iron and Steel Institute have remained in force.

## American Welding Society

The first meeting of the American Welding Society was held on March 28 at the Engineering Societies Building, 29 West Thirty-ninth Street, New York. The following officers were elected:

President, Dr. C. A. Adams, dean Harvard Engineering School, Cambridge, Mass.

Vice-president for one year, J. M. Morehead, New York.

Vice-president for two years, G. L. Brunner, Brunner Mfg. Co., Utica, N. Y.

Directors for one year: W. M. Beard, Linde Air Products Co., New York; M. H. Roberts, Air Reduction Sales Co., New York; M. M. Smith, Commercial Acetylene Co., New York; L. D. Lovekin, American International Shipbuilding Corporation, Philadelphia; Alexander Churchward, Wilson Welders & Metal Co., New York; W. H. Patterson, Westinghouse Electric & Mfg. Co., Pittsburgh; Walter J. Jones, Chester Shipbuilding Co., Philadelphia; C. A. McCune, Page Steel & Wire Co., New York.

Directors for two years: R. R. Browning, New York; A. S. Kinsey, Jersey City; Victor Mauck, John Wood Mfg. Co., Conshohocken; E. L. Hirt, Bethlehem Shipbuilding Corporation, South Bethlehem; J. F. Lincoln, Lincoln Electric Co., Cleveland; H. M. Hobart, General Electric Co., Schenectady; D. C. Alexander, Quass Arc Weldtrode Co., New York; H. R. Swartley, Jr., Davis-Bournonville Co., Jersey City.

Directors for three years: L. H. Davis, Linde Air Products Co., New York; E. L. Mills, Air Reduction Sales Co., New York; D. B. Rushmore, General Electric Co., Schenectady; James Burke, Burke Electric Co., Erie; D. H. Wilson, Jr., Wilson Welders & Metal Co., New York; Hermann Lemp, General Electric Co., Erie; C. J. Nyquist, Chicago; Alexander Jenkins, Alexander Milburn Co., Baltimore.

It was voted that the charter should be held open for ten days and that those applying for membership before April 8 should be considered charter members. At a meeting of the directors in the afternoon, W. E. Symons, Galena Signal Oil Co., New York, was appointed treasurer and H. C. Forbes, consulting engineer, secretary.

## Belgian War Output of Iron and Steel

The output of iron and steel in Belgium in the first three years of the war is now made public, according to the *Moniteur des Intérêts Matériels*, which publishes a report compiled by M. Dejardin, director general of mines. So far as given out it is as follows:

	1914	1915	1916
Number of iron and steel plants at work.....	19	4	4
Number of furnaces in blast.....	54	6	6
Number of days in blast.....	207	175	222

The output of iron and steel was as follows, in tons:

Pig Iron:	1914	1915	1916
Foundry iron .....	60,310	26,260	58,880
Forge iron .....	28,660	3,150	17,000
Steel making (Bessemer).....	44,390	14,730	17,400
Steel making (open-hearth).....	1,316,450	19,730	36,540
Special pig iron .....	4,680	4,220	.....
Total .....	1,454,490	68,150	127,820
Direct castings .....	32,320	4,350	2,540
Bessemer steel .....	1,248,370	67,510	40,860
Open-hearth steel .....	111,610	26,960	55,970
Blooms and billets.....	845,670	40,140	34,730

The output of finished steel in 1914, 1915 and 1916 was 866,350 tons, 94,270 tons and 61,900 tons respectively.

The Newark Stamping & Foundry Co., Newark, Ohio, has purchased all patterns and equipment, patents and good will of the May Fieberger Co., Akron, Ohio, manufacturer of furnaces. The entire equipment is now being moved to Newark, Ohio. The capital stock will be increased to \$150,000. A new building will be erected.

The Greenville Steel Car Co., Greenville, S. C., is now working its plant only eight hours per day and has recently laid off a large number of men on account of lack of orders.

## Instrument for Compressible Materials

A resiliometer for recording in positive figures the normal thickness, hardness, hysteresis and resilience of compressible materials is now being produced on a commercial basis by the Widney Co., Chicago.

Normal thickness and hardness are recorded on the dial. Hysteresis and resilience are recorded in graphs and are determined by applying weight in successive increments of the same amount and releasing the load in corresponding decrements.

Already, it is stated, the method has been proved sound with respect to most compressible materials. Experiments with woven fabrics are now being completed and it is expected that scientific

Instrument for Determining Mechanical Qualities of Compressible Materials

specifications will soon govern their manufacture, purchase and use.

## Magnetic Holding Devices for Shop Work

Blocks built up of alternating layers of magnetic steel and insulating material, which are especially adapted for holding pieces in place for grinding and other similar shop operations, has been brought out by the Kar Engineering Co., 79 East 130th Street, New York. They are designed to hold the material in place on the machine bed in a manner similar to the way material is held in place by magnetic chucks, and it is claimed that they result in a considerable saving in time otherwise required to adjust and fasten the work in place. Several types are produced and it is pointed out that they become a magnet by conduction, but do not generate magnetism and therefore consume no current; that they deliver from 80 to 85 per cent of the holding power of the magnetic chuck and do away with special fixtures and jigs, enabling toolroom grinding operations practically to be carried on without them.

These holding blocks are furnished in various forms, square with flat sides and top, square with V-shaped bed holding rectangular pieces at 45 deg. from horizontal, and a protractor type, consisting of a bed with semi-cylindrical surface carrying a movable piece to rotate to any angle and mounted with a protractor scale at the end for adjustment. Several sizes are furnished for standard operations.

The Lincoln Electric Co., Cleveland, announces that the school for teaching men to operate the electric arc welder established at its plant by the Emergency Fleet Corporation will be continued by the company and placed at the disposal of any manufacturer who desires to send men to the school for instruction.

## Power Pulley of New Type

A lifting device weighing 12 lb., but having a lifting capacity of 1 ton, is being marketed by the Bickley Mfg. Co., 1035 Chestnut Street, Philadelphia. It is known as the Bickley power pulley, and is designed so that one man can handle heavy loads and exert a strong pulling force. The overbearing construction permits of removing or replacing the cable on the pulley without laborious winding. An angle eye provided makes attachment to brackets possible without difficulty. In order to permit pulling in restricted places, the handle is equipped with a ratchet.

The device is of use not only for heavy lifting, but is of service in moving heavy weights, drawing belt ends together for lacing, or for other purposes where a heavy pulling force is required.



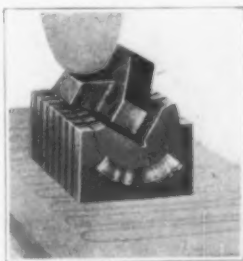
Power Pulley with a Lifting Capacity of 1 Ton

## Classification of Machinery

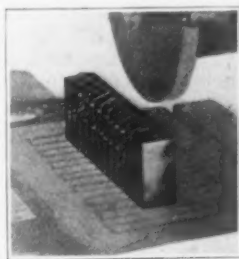
In addition to the proposed classification of iron and steel products for use in collecting foreign trade statistics published in THE IRON AGE of March 13, the proposed classification has been issued on vehicles, power generating machinery, farmer's and dairymen's machinery, metal working machinery in parts, mining, excavating and road machinery, pumps, compressing machinery, elevating machinery, factory machinery, electrical machinery, office and store equipment machinery, printing machinery and miscellaneous machinery.

Owing to lack of space, details as to the classification cannot be published, but full particulars may be obtained by addressing the chairman of the committee, G. B. Roorbach, Room 714, Munsey Building, Washington, who will be glad to receive any suggestions or criticisms.

Articles of incorporation have been filed with the Secretary of State at Albany creating the Electric Vacuum Cleaner Co., Inc., with principal offices in Cleveland and New York. The new company is a consolidation of the business and manufacturing facilities of the Frantz-Premier Co., Cleveland, and the vacuum cleaner business of the Edison Electric Appliance Co., Chicago. It will be devoted to the manufacture and sale of electric vacuum cleaners and will equip its output with General Electric motors. The directors of the new company are: Julius Tuteur, Maynard H. Murch, John Sherwin, A. V. Cannon, and E. W. Miner, Cleveland; F. S. Hunting, Fort Wayne, and others.



Cylindrical Bed Permits Rotation of Work to Give Any Bevel



Finishing Operation Carried Out on Small Parts in Multiple



Work May Be Mounted to Allow for Irregular Forms

# Midvale Steel's Part in Winning the War

## Annual Report Reviews Achievements of Nicetown Works and Other Plants—Confidence Expressed in Representative Plan—Earnings Show Decrease

**I**N the report of the Midvale Steel & Ordnance Co. for 1918, which is signed by A. C. Dinkey, president, and William E. Corey, chairman, the opinion is expressed that as long as business is compelled to carry the burden of the excess profits tax there will not be any material expansion of new enterprises.

The net earnings for the year amounted to \$50,529,012, compared with \$69,838,253 for the preceding year. The allowance for federal taxes was \$20,600,000, compared with \$13,836,596 for the preceding year. The net income for 1918 was \$29,208,536, compared with \$35,576,558 in 1917. The surplus, Dec. 31, 1918, was \$53,720,097, compared with \$41,461,560 the year earlier. The report says:

### Readjustment of Prices

"The year of 1918 will be marked in history as that in which the great world war was brought to a successful conclusion by the signing of the armistice on Nov. 11. This resulted in an immediate relaxation of the great pressure for delivery of steel products for war purposes. This radical change in trade conditions has brought with it all of the problems which are always incident to a period of readjustment, the principal of which are, of course, the adjustment of commodity prices and the wage rates of employees.

"All business men are agreed as to the desirability of restoring normal conditions as quickly as possible. It is not reasonable to expect that the level of commodity prices in effect at the close of hostilities can be maintained during peace conditions, and that a normal volume of business can be expected on that basis. On the other hand, as a result of this epoch-making war, it is probable that there will be a permanent rise in values, so that we should not expect a return to pre-war levels, either in commodity prices or wage rates.

"As long as business is compelled to carry the burden of the excess profits tax, we cannot expect any material expansion in the nature of new enterprises. Men will not incur the great risks inseparable from such undertakings unless gains commensurate with the risks involved are also possible. Therefore, we do not anticipate anything in the nature of a boom; but, on the other hand, we believe that the regular everyday needs of the American people, supplemented by such export business as we are able to obtain, will be sufficient to maintain a healthy trade movement until the country is able to work out from under the abnormal tax burden imposed by the war.

"In order to provide for the expansion of our foreign trade, and to realize the benefits to be derived from cooperation in this trade with other leading steel companies, as permitted under the provisions of the Webb act, our company has participated, as a stockholder, in the organization of the Consolidated Steel Corporation, which corporation will hereafter handle practically all of our products sold for export.

### The Representative Plan

"The officers of the company for some time past have been considering the advisability of adopting some method which would provide a practical means of communication and conference with the employees collectively on all matters pertaining to the relations between them and the company. A definite plan of representation of employees was approved by the board of directors, for the company, and by a committee of workmen elected by all of the employees, and became operative Oct. 1, 1918. We believe that this fuller recognition of the dignity of labor is one of the most important advances made in recent years in the attempt to solve the vexed question of the relations between employers and employees, and we confidently expect

that it will serve to promote the mutual understanding which is so vital to the success of any large enterprise.

"The principal extensions made during the year were the new rolled steel wheel plant, the 134-in. plate mill and 90 by-product coke ovens, together with by-product recovery plant, all of which are located at Johnstown.

"At the urgent request of the War Department, we undertook the erection of a plant for the manufacture of 16-in. howitzers on ground purchased by the Government adjacent to our Nicetown works. Work on this plant was suspended in December; all of the funds expended having been provided by the Government, in which the title is now vested.

"Although the war has profoundly affected living conditions, it has left unimpaired our great natural resources, as well as the indomitable energy of the American people, which are the sources of our industrial prosperity. We, therefore, look forward to 1919 hopefully, believing that when business has been fully released from the unusual restraints imposed upon it by war conditions, the combined common sense of employers and workmen will promptly adjust our industries to a basis which will be in harmony with economic laws, and on which we can reasonably expect a fair volume of trade."

### The Winning of the War

The following interesting account of what is called "Our Part in the Prosecution of the War in Defense of Civilization" is given:

"The part played by our Nicetown works in the war is an interesting one. When the war in Europe began there were only two steel companies in the United States fitted by experience to undertake the manufacture of guns on a large scale, of which our Nicetown works was one, as it had been engaged in such manufacture for 30 years. The extensive production of this material was first undertaken in October, 1915, when the plant came under its present management. Early orders from the British and French governments for equipment for their own troops, as well as for those of Russia, included guns, high-explosive shells, barrel and bayonet steel, and entrenching tools. During the period of the war the Nicetown works furnished the British government with 96 finished 8-in. howitzers, and 110,300 12-in. high-explosive shells. During the same period the French government received from that plant 3572 rough forged jackets for 75 mm. guns, 678 complete sets of forgings for 155 and 220-mm. guns, and approximately 26,000 high-explosive shells in 220, 270 and 280-mm. sizes. The British and French high-explosive shells represented a total weight of 45,350 gross tons, or 101,000,000 lb. The Canadian government was supplied with 25,000 embrasured entrenching tools designed to serve at one time as a shovel, to enable the soldier to entrench himself, and at another, as an individual shield against rifle bullets.

"Old and new manufacturers of small arms throughout the country developed an unprecedented output of rifles, bayonets and Browning machine guns, a large proportion of the steel for which was supplied by the Nicetown works. The aggregate weight of the steel shipped for these purposes was over 20,000,000 lb.

"High grade heat-treated alloy steels for use in the manufacture of the better grades of pleasure automobiles and trucks had long represented a considerable part of the output at Nicetown. With the advent of war conditions there was a greatly increased demand for automobile trucks, with at first no diminution in the demand for other types of cars. The bulk of the output of this character during the war was employed in the construction of automobiles for war purposes. From



October, 1915, to November, 1918, shipments from that plant exceeded 15,000 gross tons.

"Our Nicetown plant for a long time has been eminently successful in the production of heavy armor plate for the equipment of battle cruisers and dreadnaughts. The Navy Department, during a portion of the time in which this country was engaged in the war, subordinated its demands for armor to its needs for steel in other forms. As a consequence, during that period there was not always a maximum production of armor, although all of the requirements of the Government were fully met. Even under these conditions, and notwithstanding the large amount of steel otherwise produced, 19,394 tons of heavy armor were produced for use on the Mississippi, Tennessee, Maryland and Washington. In addition, a small quantity of light armor was produced for use on armored trucks.

#### Helping the U. S. Government

"On April 6, 1917, when this country declared war against Germany, our Nicetown works, which had already produced large amounts of steel for the British and French governments, was suddenly called upon to

#### Consolidated Statement of Income

Net earnings from operations (after deducting all expenses incident to operations including those for ordinary repairs and maintenance amounting to approximately \$20,600,000 and for Federal taxes).....	\$50,529,012.08
Other income:	
Income on securities, commercial interest and discount, etc. ....	1,507,926.56
<b>Deduct:</b>	<b>\$52,036,938.64</b>
Provision for depreciation, obsolescence and mine exhaustion..	\$9,915,776.83
Provision for amortization under Federal income tax law.....	5,193,563.23
Bond interest .....	2,880,341.61
Guaranteed dividend on Cambria Iron Co. stock .....	338,720.00
Reserve for anticipated inventory depreciation, etc. ....	4,500,000.00
	22,828,401.67
Net income for the year 1918 after providing for profits applicable to minority interests .....	\$29,208,536.97
Surplus—Unappropriated, per certified accounts, Dec. 31, 1917 ..	\$41,461,560.95
<b>Deduct:</b>	
Special depreciation written off plant and property ....	\$4,950,000.00
Dividends declared and paid during the year .....	12,000,000.00
	16,950,000.00
	24,511,560.95
Surplus—Unappropriated, balance Dec. 31, 1918, carried to balance sheet.....	\$53,720,097.92

supply its part of the more urgent requirements of our own Government. The plant was adequately equipped for the purpose, and was operated by a staff well trained in the manufacture of such products, on account of which, all of the material ordered was either furnished ahead of, or within the contract time, and never during the entire period of the war was there a single complaint by the Government on account of non-delivery within the time specified. Due to the urgent requirements of the Navy in the maintenance and protection of its transport service, it was decided at a conference with Army and Naval officials to devote the major portion of the output at that plant to naval supplies.

"During the 19 months in which this country was engaged in the war the Government was supplied with relatively enormous quantities of armor-piercing shells, large and small guns, armor plate and air flasks for torpedoes, while at the same time production in other lines was carried on extensively. High-speed tool steel was produced both for use at Nicetown and at the plants of other companies doing machine work in connection with the manufacture of munitions. Large numbers of forgings were made, including shafting and bucket wheels for marine and other engines, and rotor ends and drums for use in the construction of destroyer turbines. Steel wheels and tires were made for American and French railways, some of which were used on the famous Pershing engines. The quantities of some of the latter items are sufficiently large to merit mention—2,250,000 lb. of high-speed steel, 1200 gross tons of

marine forgings, 120,600 tires and rings with a weight of 37,169 tons, and 42,592 built and rolled wheels, weighing 14,418 tons.

#### Guns Produced

"The guns produced from April, 1917, to November, 1918, comprise 3-in. anti-aircraft, 3-in. Army and 3-in. Navy guns for torpedo chasers, 4-in. guns for merchant-craft destroyers and Eagle boats, 5 and 6-in. guns for destroyers, armed merchant vessels and battleships, together with the larger sizes, such as 8-in. howitzers, 8-in. bomb throwers, and 12, 14 and 16-in. guns for battleships. These articles were furnished principally in the form of forgings. There were, however, some finished guns, among which were 11 6-in. guns of 53 caliber (which are expected to be the most powerful 6-in. guns yet made), 7 14-in.

#### Subscriptions to Liberty Loans

	By the Company	By Employees	Total
First loan .....	\$750,000.00	\$1,443,250.00	\$2,193,250.00
Second loan .....	2,294,550.00	1,202,500.00	3,497,050.00
Third loan .....	4,000,000.00	1,812,000.00	5,812,000.00
Fourth loan .....	6,000,000.00	2,250,550.00	8,250,550.00

Total .....\$13,044,550.00 \$6,708,300.00 \$19,752,850.00  
Employees' subscriptions were underwritten by the company and payments were made by employees in monthly installments.

\*NOTE.—The total subscriptions of the company amounted to \$15,819,550, but on the First and Second loans its allotments were reduced.

guns of 50 caliber, and 200 8-in. howitzers, complete. Concerning these howitzers, it is worthy of note that at the latter part of the war production had reached a point where from 20 to 25 of these guns were finished each month. Some of the 14-in. guns were placed on railway mounts, and used to hammer the rear of the German army during the closing days of the war. In the aggregate, major forgings or finished guns, sufficient to complete 2468 guns of 3-in. to 16-in. bore, were supplied to the Government. On one order for 3, 4 and 5-in. guns the number of pieces approximated 10,000. These, of course, were relatively small pieces, but on guns of larger bore the weights mount rapidly. In the case of 16-in. guns of 50 caliber, the weight of a set of rough machined forgings exceeds 360,000 lb. The total weight of all domestic gun forgings shipped during the period of the war was over 27,000,000 lb., which amount was increased by 65,000,000 lb. produced at the same time for our allies. The total number of guns for which major forgings were supplied to our allies, as well as to our own Government, was 6814. It has been estimated that the Germans had 18,000 guns of all calibers on all fronts on July 15, 1918. When these figures are compared, the importance of this single item produced at one plant becomes apparent.

"The manufacture of armor-piercing shells at the Nicetown works was not a new undertaking, but it was a matter of great good fortune that the shells developed during the war were superior to any previously known. A British naval officer, after a competitive armor and shell test, in which the famous Hadfield shell was used, characterized those produced at Nicetown as "epoch-making." During one test, one of the 12-in. shells

#### Men Employed and Wages (Eddystone rifle plant not included)

ALL COMPANIES Ore to Finished Product	1916	1917	1918
Total pay roll.....	\$31,521,531	\$47,555,197	\$59,304,724
Average number of employees .....	31,048	38,375	34,434
Average wages per man per year .....	\$1,015	\$1,307	\$1,722
Gross tons steel products shipped .....	1,558,108	1,614,373	1,448,374
*Wages per ton of steel product shipped .....	\$18.95	\$27.95	\$39.44

\*Total pay roll, less portion expended on construction and improvements, divided by tons of steel product shipped.

pierced in succession two pieces of hardened armor, 9 and 13 in. in thickness, without itself suffering injury. There were produced at that plant 11,000 12-in., 19,741 14-in. and 1100 16-in. shells. This permitted the re-

equipment of all dreadnaught battleships with 14-in. shells of a quality hitherto unequaled.

"Our plant at Nicetown is not a tonnage plant, and its output may not fairly be contrasted with that of tonnage plants, for the reason that its product consists chiefly of special forgings, usually rough or finished machined, and made not only to rigid chemical specifications, but to even more rigid physical specifications. This latter requirement makes necessary the heat treatment of perhaps 90 per cent of the product. In view of these conditions, which govern practically all manufacture at that plant, the shipment of over 300,000,000 lb. of steel between April 6, 1917, and Nov. 11, 1918, constituted an extremely valuable contribution in helping the United States to win the war.

"In April, 1917, when the United States declared war against Germany, our company was fortunately in a position to commence the manufacture of rifles required for the equipment of our troops. A brief

interval was required to adapt the manufacturing equipment at Eddystone to the new design, which was the British Lee-Enfield rifle, modified to use Springfield ammunition, after which we immediately began production, and by Dec. 31, 1918, had shipped 1,299,261 rifles.

"The Johnstown works, which is primarily a commercial plant, was called upon to supply large quantities of ship plates, shell steel, rails, bars, gun mounts, gun trails, war barbed wire, etc. The Coatesville works furnished large quantities of ship and boiler plates, boiler tubes and flanged products; also approximately 380,000 6-in. and 8-in. shell forgings. These two plants, from April, 1917, to December, 1918, inclusive, supplied the shipyards with 248,818 net tons of plates, bars, structural and other ship steel. In addition to this, more than 350,000 net tons of the same products were furnished to the Navy Yards, the Army locomotive builders and others, under priority orders."

## BRITISH STEEL COSTS

### What Benjamin Talbot Thinks About Possibilities of Active American Competition

LONDON, ENGLAND, March 10.—Among the witnesses giving evidence before the coal miners' commission has been Benjamin Talbot, Cargo Fleet Iron Co., Middlesbrough, England, who was called on behalf of the National Federation of Iron and Steel Manufacturers. He presented a report in which it was stated that when the Government subsidy is removed in April the steel manufacturers would be paying for blast furnace coke over 39s. (\$9.20) per ton at ovens against the United States price of 18s. to 20s. (\$4.25 to \$4.75) per ton. The effect of the withdrawal of subsidies would necessitate a substantial increase in the price of all iron and steel goods, and any increase in the price of coal would also have to be added.

For every shilling advance in the price of coal approximately 4s. (95c.) a ton was added to the cost of producing finished steel, while for wrought iron the increase would be much greater. Already the price of iron and steel for home consumption was much too high, and at the present level the trade of the country could not be for long carried on at anything like the full capacity of the works, while any further increase would be disastrous. Manufacturers stated emphatically that the effect of materially increasing the cost of coal would not cripple many industries in this country, but would so injuriously affect the exports of iron and steel as to lead to a decrease in production and consequent lack of employment.

#### Severe Competition with United States

In the course of his examination he said he did not think it likely that British manufacturers could obtain British pig iron at a price enabling them to compete with America if the increases in wages continued, and that assuming the miners' demands are conceded there are very bad times ahead. He was of opinion that no system of unification or complete nationalization of the coal mines would result in British industries being worked more economically than at present. He thought there should be one combination on the part of coal and steel industries.

He agreed that British steel makers were threatened not only abroad, but in the home market by American competition, America being now able to produce steel plates more cheaply than they could be produced here. Wages in the iron and steel trade were largely regulated by a sliding scale, and since the outbreak of war wages had been increased 100 per cent, while the working hours were now being reduced from 12 to 8. It required 4 tons of coal to produce a ton of steel, and as there was a royalty on coal of 6d. per ton, every ton of steel contributes a royalty of 2s. The royalty on Cleveland iron ore was 4d. to 5d. a ton, that on Cumberland was on a sliding scale, while the royalty on limestone was 1½d. per ton.

There was no restriction on output at all in America where the work was intensive. He agreed that Germany, unlike America, could not entirely consume her

own iron and steel before the war, but if France obtained what she expected regarding Alsace and Lorraine and the Saar coal field she might take Germany's place in the future. As far as this country was concerned, Mr. Talbot said the steel industry was subject to such severe competition that there was no inducement to increase the output.

#### Wages Increased and Output Reduced

In the course of evidence given by Sir Thomas Watson, of Pyman, Watson & Co., Ltd., the witness stated that when the 8-hr. act came into effect in 1909, the coal output per man in South Wales immediately dropped by 20 tons per annum, and the fall continued through 1910, 1911 and 1912, and was only checked in 1913 when the shortage of wages caused by the strike in 1912 had to be made up. The output per man increased in 1914, 1915 and 1916. In 1917 probably on account of the best men having joined the Army, and on account of the rise in wages, the quantity per man dropped to 220 tons, the worst on record. The output in South Wales per man in 1918 was 248 tons; in 1909, 245 tons; 1910, 228 tons; 1911, 227 tons; 1912, 222 tons; 1913, 243 tons; 1914, 243 tons; 1915, 248 tons; 1916, 243 tons, and in 1917, 220 tons. The invariable experience was that an increase in wages was accompanied by a reduction in output.

In the opinion of the witness 10s. (\$2.40) a ton would cut out the difference in actual cost and freight from the United Kingdom and from America to France, and 8s. (\$1.95) a ton in the case of Italy. The European belligerents had been denuded of money and would jump at any chance of long credit, while America, having got our cash and our securities, had a superabundance of capital, and would be prepared to make loans to France and Italy on condition that the loans were taken up in her coal and other products. Replying to questions, he said, he seriously thought that the British coal trade would be prejudiced by a reduction of hours from 8 to 6, and by the granting of a 30 per cent increase in wages. If these demands were conceded he believed the time would come before very long when our pits would be standing idle for want of trade.

The Phoenix Iron Works Co., Meadville, Pa., has opened a New York office at 619 Fifth Avenue Building (No. 200 Fifth Avenue) in charge of J. E. Kindregan and Paul C. Rodgers. Mr. Kindregan continues representing this company as district sales manager, with an office in the Harrison Building, Philadelphia, and will devote only a part of his time in the company's interest at New York. In addition to the New York territory Mr. Rodgers will also continue the representation of the company at Boston.

The Boston Gear Works, Norfolk Downs, Mass., has established a branch at 623-625 Washington Boulevard, Chicago, of which Frank E. Artz, formerly with W. L. Procnunier, Chicago, is in charge. The company will carry in its Chicago stock over 1200 sizes of standardized cut gears, as well as a large assortment of automobile gears.

A Light Crane Removes the Molds on Rail Skids, Maintaining Proper Working Conditions on the Pouring Floor



### SKIDDING MOLDS

#### Foundry Work Expedited by Removing Them in Groups from the Pouring Floor

To overcome congestion near the molding machine, when handling molds where the copes and drags can be taken from the machines by hand in their initial condition or with light crane, recent practice, as described in *Foundry World*, the periodical published by the H. M. Lane Co., consulting engineer, Detroit, is to use skids for handling the molds in groups. They are placed close to the molding machines with the empty flasks on them. These are taken off one by one, the molds rammed, and returned to the skids. The molds are cored up and in some cases the runner boxes are built near the molding machine. In other cases the skidful of molds is carried to the pouring floor before the runner boxes are completed. After pouring, the skids of molds are taken to the shake-out and subsequently the skids with empty flasks returned to the vicinity of the molding machine.

In the view shown at the foundry of the Detroit Steel Casting Co., Detroit, Mich., the skids were made of two pieces of railroad rail which are joined together by suitable castings and provided with heavy loops at the end for handling with large traveling cranes and a porter bar. This method has proved of value in avoiding the ever increasing carry around the molding machine.

#### General Motors Corporation Purchases the Lancaster Steel Products Co.

The General Motors Corporation, New York, has purchased all the property of the Lancaster Steel Products Co., which will operate as a subsidiary of the corporation.

The Lancaster Steel Products Co., to which name the name of the New Process Steel Corporation was changed in 1916, was incorporated in 1911, with a capital stock of \$50,000, which was increased in 1916 to \$1,000,000. In 1918 its net shipments exceeded \$3,150,000, and its employees numbered upward of 250 men, while the total pay roll had increased to nearly \$400,000 annually.

The board of directors as at present constituted comprises H. B. Cochran, Lancaster, president; J. G. Weiss, general manager of the Hyatt bearings division, General Motors Corporation, Newark, N. J., vice-president; John S. Cochran, Lancaster, treasurer and general manager; Alfred P. Sloan, Jr., vice-president of the General Motors Corporation, New York, and E. B.

Hite, Lancaster, Pa., who is also general superintendent, while H. L. McClure is secretary.

The Lancaster Steel Products Co. manufactures cold-drawn and cold-rolled alloy and tool steels, special cold-drawn steel shapes and steels for many purposes.

#### To Transfer Liberty Plant July 1

YOUNGSTOWN, OHIO, April 1.—Formal transfer of the plant of the Liberty Steel Co., one mile west of Warren, Trumbull County, Ohio, to the Trumbull Steel Co. will take place July 1 next, announces President Jonathan Warner of the Trumbull company. The acquisition, announced by *THE IRON AGE* of March 13, will give the Trumbull Steel Co. a finishing capacity of approximately 360,000 tons. Its principal products will be tin plate and steel sheets. The Liberty Steel Co. officials are preparing to install four additional sheet mills, and these improvements will be carried out. It has an authorized capital of \$3,000,000, of which \$1,000,000 common is issued, and \$500,000 preferred.

#### One Hundred Years of Peter A. Frasse & Co., Inc.

Peter A. Frasse & Co., Inc., New York, Philadelphia, Buffalo and Hartford, have issued an elaborately compiled booklet, entitled "One Century in Business." A historical sketch outlines the steps in the progress from the foundation of the business by Henri Frederic Frasse, a Swiss watchmaker, who started a shop at 95 Fair Street, now Fulton Street, and who aided Fulton in making his model steamboat and under-water torpedoes. Photographs of the successive shops and officers show the evolution of the business until the present, when it is a leading manufacturer of tubing, steel, tools and supplies.

The Gyrovis Co., Cleveland, is placing on the market a thread protector for pipe tubing or casing made in 3/4 to 10 in. sizes inclusive. This protector, which screws on the end of the threaded pipe to protect it during handling, is made of cold-drawn steel and has a reinforced flanged end. Edward James is sales manager of the company.

The board of directors of the American Foundrymen's Association has recommended the creation of a reserve fund of \$5,000 against possible deficits resulting from strikes, epidemics or other unforeseen factors interfering with the success of its future exhibitions of foundry machinery, equipment and supplies.



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# THE IRON AGE

EDITORS:

A. I. FINDLEY

WILLIAM W. MACON

GEORGE SMART

CHARLES S. BAUR, *Advertising Manager*

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## Pig Iron in 1918

The detailed statistics of pig iron production in 1918, as just presented by the American Iron and Steel Institute, show a total output much below the capacity, a fact that was apparent throughout the year by the monthly blast furnace reports of THE IRON AGE. The 1916 output, 39,434,797 gross tons, stands as record, 1917 having shown only 38,621,216 tons, and 1918, 39,051,991 tons. With four new blast furnaces completed in 1916, 14 in 1917 and eight in 1918, the production last year under favorable manufacturing conditions might have been 44,000,000 tons.

Comparing 1916 with 1918, there was a decrease of 1.35 per cent in the production of Bessemer and basic iron, from 32,106,544 tons to 31,671,140 tons, while there was an increase of 1.96 per cent in the production of steel ingots. This was due to more pig iron passing through the open-hearth furnace and less through the Bessemer converter, as there was a decrease of about 1,400,000 tons in the output of Bessemer iron and an increase of about 1,000,000 tons in the output of basic iron. The increase of 810,000 tons in the production of ingots, from 41,400,000 tons in 1916 to 42,210,000 tons in 1918. If ingot production in 1918 had borne the same relation to Bessemer and basic pig iron production as obtained in 1916, the ingot total would have been 1,375,000 tons less than it was. This effectually disposes of the claims so frequently made in 1918 that scrap was in very short supply. The ingot tonnage could not have been made if there had not been the scrap. Scrap was simply scarce in relation to the demand for it, for the works wanted much more than usual. Furthermore, a shortage in heavy melting steel was frequently referred to as a shortage of scrap in general. Mills used lower grades of scrap, when they would have preferred good, heavy melting steel.

Continuing the comparison between 1916 and 1918, since in the one year the United States was not in the war and in the other year it was, it may be observed that the production of pig iron of other grades than Bessemer and basic showed no material change. Foundry iron production decreased slightly, while production of malleable and forge increased somewhat. Foundry iron production decreased 7 per cent while malleable production in-

creased 20 per cent, but the increase did not count for much in point of tonnage.

For a longer range comparison, however, it may be noted that in 1916, 1917 and 1918, when the demand was heavy for war material, the production of foundry iron averaged 5,300,000 tons a year, while that same amount had been produced in 1909, when the total production of pig iron was precisely two-thirds what it averaged in the past three years. One might infer that the steel casting was replacing the iron casting, but this it is not doing to any great extent. The more applicable explanation is that consumption of rolled steel increases much more rapidly than consumption of iron castings, and somewhat more rapidly than consumption of steel castings.

Production of ferromanganese made a new record, with 333,027 tons. Our production of this alloy did not cross the 100,000 ton mark until 1912.

## Chicago Basing in Steel

The statement that "basing points and differentials are unchanged," made by the Industrial Board of the Department of Commerce in connection with the new price schedule announced March 21, negatives for a time, at least, the efforts of those Western consumers of iron and steel who sought to have Chicago re-established as a basing point. The board, in its official statement explanatory of the price-regulating action, also says that the public should not expect to buy at lower levels during the current year, and from this it has been inferred that conditions such as those pertaining to basing points will remain unchanged for the same length of time.

As reported in recent issues of THE IRON AGE, an energetic agitation has been carried on by the Western Association of Rolled Steel Consumers, a new organization, to have Chicago made a basing point, as it was in the first nine months of Government regulation, or up to July 1, 1918. The association referred to has been diligent in holding meetings in Chicago and other Western cities, gaining many members from Minnesota to the Gulf. Its purpose is to enable Western consumers to buy their steel without having to pay all or the greater part of the \$5.40 Pittsburgh to Chicago freight per net

ton of finished steel. The officers of the association advanced a number of arguments which gained supporters.

Western mills made no concerted effort to combat the movement, although they made clear to their customers that there were two sides to the question. They have received numerous requests for a Chicago mill price and have found it difficult to appease some of their friends. For the time being, at least, it may be reiterated that the question is settled, and the basing point for most products is Pittsburgh. Incidentally, it is to be said that when business is needed by the Western mills they have been known to make allowances, at the same time pointing out to their customers the advantages in time and in other ways, of getting deliveries from a nearby point through a regular source of supply. There is the possibility, also, though in the recent agitation it apparently has not been taken into account, that if there were two basing points each might have its own price. Consumers, on the other hand, argue that the operation of the Pittsburgh base tends to restrict their zone of activity, giving their Eastern competitors advantage.

### An Interesting Steel Report

The United States Steel Corporation's annual report, always interesting, is particularly so in the case of that covering operations in 1918. Take up output first, the corporation's production of "rolled and other finished steel products for sale" amounted in 1918 to 13,849,483 tons, against 14,942,911 tons in 1917 and 15,460,792 tons in 1916, the record year. Thus there was a decrease of 10 per cent from 1916 to 1918 although the corporation's capacity had materially increased.

Seeing that the official statistics of pig iron production in the United States in 1918, just made public, show an output only 1 per cent below that of 1916, and 3.7 per cent in excess of the 1917 output, it might be thought that the Steel Corporation's production of 7.4 per cent less finished material in 1918 than in 1917 was a divergence from the regular experience, but it should be noted that the corporation made somewhat more pig iron in 1918 than in 1917, and it had only a little less steel ingot production. The decrease in output of finished product was a separate matter. Just how the divergence occurred is not clear, but the fact that there was a large increase in inventory in pig iron, scrap and unfinished steel is suggestive of the uncompleted manufacturing operations that the war would naturally leave.

The smallness of the 1918 tonnage makes the showing of total or nominal profits all the more impressive, just as these nominal profits are largely in excess of the actual earnings when the necessary allowances have been made.

The 1918 earnings, taking the item in the form usually selected for comparative purposes, after payment of subsidiary company bond interest and before ordinary depreciation and sinking fund charges are deducted, amounted to \$199,350,680, the corresponding amounts being \$295,292,180 for 1917, \$333,574,178 for 1916 and \$160,964,674 for 1907, the corporation's best year before the war.

The corporation pursued a conservative course,

and placed itself in strong position, by making liberal deductions from its apparent profits before arriving at its reported earnings. Its allowance of \$274,277,835 for all Federal taxes is no doubt sufficient to cover the highest interpretation of the tax law the Government may reach. Another deduction is \$20,297,000 from inventory, to cover "actual cost or market value in excess of normal prices," while still another was \$40,000,000 as a portion of "cost of facilities installed for production of articles contributing to prosecution of the present war," this being deducted from gross income before earnings were reported. A further deduction of the same character, and amounting to \$12,215,000, is from the year's surplus. Incidentally, it may be noted that several million dollars in employees' bonuses were distributed, out of and by reason of the total profits. These various amounts, though not returnable as earnings, were profits in the same sense that they accrued from the sale of the corporation's products. If under other circumstances the same sales had been made and the necessity for the deduction had not existed, the full amount would have been in the form of earnings, an amount not far from \$550,000,000, and this with an output 10 per cent less than that of 1916, when the reportable earnings were \$333,574,178.

An interesting showing is made of the war material delivered. The two periods are taken, from the beginning of the war, Aug. 1, 1914, to April 1, 1917, approximately when the United States entered the war, the second period being from that date to the end of 1918. In the first period the tonnage of steel furnished the United States Government and its customers was 1,434,530 tons, while in the second period the amount was 7,669,910 tons. To the Allies, on the other hand, the exports were 4,623,110 tons in the first period and only 2,669,840 tons in the second. The total of all war steel furnished the United States and the Allies, for the entire war period, was 18,439,460 tons.

A very interesting chapter in the report is that relating to the Steel Corporation's activities in the war. While the references are individually very brief, the total account is a long one. An outstanding item is that the corporation's additions to plate rolling capacity amounted to approximately 923,000 tons per annum. Its actual production of plates in 1918 was 2,171,362 gross tons, against 1,473,625 tons in 1917 and 1,332,262 tons in 1916. Few if any plates were sold at the high export prices, the Steel Corporation concentrating to an unusual degree upon the wants of the Government and its Allies. This policy was conspicuously helpful in pushing forward the Emergency Fleet Corporation's program. It also resulted incidentally in leaving the Steel Corporation with a large tonnage of unfilled plate orders in its book when the armistice came, orders which have been an important factor in sustaining its mill operations in the past three months.

An interesting fact revealed by the German analyses of various steel shells used by the Allies, published in THE IRON AGE of March 13 is the variable manganese content, ranging from 0.62 per cent to 1.13 per cent. In the French shells the manganese ranged from 0.64 per cent to 1.13 per

cent; in the English, from 0.62 per cent to 1.08 per cent and in the Russian from 0.62 per cent to 0.92 per cent. It would seem that not only are these limits too wide but there is also revealed an unnecessary waste of manganese. Another point brought out by these analyses is that in every case the presence of copper is reported. The amount varied from 0.03 per cent to 0.10 per cent, the average approximating 0.05 to 0.06 per cent. The English shells contained from 0.03 to 0.10 per cent copper, the French shells from 0.04 to 0.07 per cent and the Russian from 0.01 to 0.07 per cent. While the percentages are small and perhaps not harmful, and while copper in forgings is regarded as detrimental and is barred by some specifications, these analyses show the presence of copper where it was least to be expected.

### Sustains Nine-Hour Day Contract

Few decisions of the National War Labor Board have received the approbation manufacturers have given that of Julian W. Mack, umpire in the case of the International Molders' Union, Local No. 11, vs. the Rochester Founders, Inc. A synopsis was printed in THE IRON AGE of March 20. In this case the board through the umpire, Mr. Mack, sustained the 9-hr. day and refused to increase wages over the amount offered by the employers when the workers attempted to break their agreement. The umpire took care to state that the views he had expressed in regard to the 8-hr. day in other cases were unaffected by the Rochester decision, but he also made it clear that in the case under consideration "the parties renewed their agreement for a year based upon the so-called 9-hr. day."

In view of the extent to which union men have deliberately violated supposedly hard and fast contracts and successfully gained their point despite the violation, it is refreshing to find a case in which labor is judicially held amenable to the terms of a contract. Equally pleasing is the implication in the decision that the manufacturers concerned acted in good faith. Too often it has been presumed that manufacturers were not disposed to be fair and just where the rights of labor were concerned.

Commenting on the decision to which reference has been made, William H. Barr, president of the National Founders' Association, says:

This action raises the hope that during its limited future activities the National War Labor Board will give closer scrutiny to all the facts presented, and will take into consideration the good faith of the contending parties, the condition of the industries affected, and eliminate any thought that it is expedient to conciliate unionists by granting unjust demands. The board has been justly subject to criticism because of the power and the peculiar activities of some of its examiners, and also because of the apparent adoption of the idea that it is better to grant the unjustifiable demands of unionists than to permit a strike to continue. The attitude of the board has been actually productive of broken agreements and of strikes because of the feeling among unionists that the board would sustain their contentions if the issue could be forced before it.

During the war the board desired to stimulate production and to end strikes, but if these desirable con-

ditions can be arrived at only by penalizing the employer through arbitrary decisions, it were better that the board did not exist.

### World's Electric Steel Output

The United States not only leads the world in the output of electric steel, but its total is not far from equal to that of all the other principal countries combined. In 1917 this country made 304,542 gross tons of electric steel. Germany in the same year made 219,700 metric tons; Great Britain's total was 68,849 gross tons. The French output has not been made public, but that of Canada was 39,069 tons in 1917 and that of Sweden 10,664 tons, both doubling their 1916 production, as did also the United States. Corresponding progress, however, is not shown by the German and British statistics. The German 1917 output of electric steel was only about 20,000 tons over that of 1916, and a similar gain was made in Great Britain.

It is probable that the figures for 1918 will show much greater strides. There seems no question among those well informed that last year's output of electric furnaces in the United States was nearer three times the 1917 output than twice, or about 900,000 tons rather than 600,000 tons. It is already evident that the 1918 output in Great Britain was nearly twice that of 1917, for it is stated that for the twelve months ended Sept. 30, 1918, the total had reached 110,000 tons, of which one company had made 31,850 tons with the country's electric steel capacity now rated at 150,000 tons per year. Canada's 1918 output is estimated at 120,000 tons, an increase over 1917 of about 300 per cent. The German output was nearly stationary in 1918, at 221,824 tons.

It is certain, therefore, that the United States will maintain its supremacy in this department and that Great Britain will soon drive Germany from second place which she has held since 1915 when the United States took first rank.

### Pig Iron Price Not Involved

In a statement by Judge Gary given out to the press at Washington Thursday night, March 20, in regard to the conference of the Industrial Board of the Department of Commerce and the committee of the American Iron and Steel Institute, the following sentence appeared and was widely published:

"The price of iron ore f.o.b. Lake Erie ports remains unchanged except where a reduction in freight rates would become effective, in which case the price of pig iron would be changed accordingly."

Judge Gary authorizes the statement that he was misquoted and that the last part of the sentence should read, "in which case the price of iron ore will be changed accordingly."

The Allentown Steel & Iron Co., Allentown, Pa., is now operating two furnaces at its new plant at Brick and Furnace streets for the production of high phosphorus cold blast iron. Other furnaces are now in course of construction and will be placed in operation at an early date, making a total capacity of about 10 tons daily. The material is designed to be used for the manufacture of boiler tubes and high-grade iron castings. The company recently filed articles of incorporation under Delaware laws, with capital of \$130,000. Louis Saab is president.



Further Rise in German Steel Prices

"How will this end?" is the comment of a leading German paper, to the last advance in the quotations for iron products decided upon at the recent meeting of the Steel Union, according to *London Engineering*. A further rise was anticipated, but no one expected such a formidable increase. Opinions are understood to have been divided, it being urged against a further advance that it would mean fresh demands from the men for higher wages. Prices for some commodities have now risen to four and one-half times what they were at the beginning of the war, as will appear from the following table:

	August, 1914, Marks per Ton	March, 1919, Marks per Ton
Bundles (Knüppel) .....	95.00	400
Sections .....	110.00	420
Bar iron .....	93.50	435
Ingots .....	82.50	385

The most recent increase amounts to 100 marks per ton for the four products in question, and 125 marks for hoop iron (present price 490 marks), and the prices are now twice as high as they were eight weeks ago.

Owing to the increase of 100 marks per ton in the price of all semi-finished steel by the Steel Union, the thick-sheet works have, according to the *London Ironmonger*, advanced their selling prices by 125 marks per ton, and the thin-sheet works by 150 marks per ton, these increases coming into immediate force. The price of thick sheets is now 500 marks, and of thin sheets 435 marks per ton. The Tube Merchants' Association has raised the prices of gas and boiler tubes by 18 per cent. The Rhineland-Westphalian Joist Merchants' Association has advanced its selling prices by 100 marks per ton. At the next meeting of the rolled wire syndicate the prices of rolled wire are to be raised.

New Blast Furnaces for India

William B. Pollock Co., steel plate construction, Youngstown, Ohio, has near completion and ready for shipment two blast furnaces for the Tata Iron & Steel Co. at Jamshedpur, near Bombay, India. The shipment will also include modern cinder cars and the Pollock short-pour hot metal ladle cars of 60 gross tons capacity for the 5 ft. 6 in. gage railway tracks in India. The company is also fabricating the material for a charcoal blast furnace for the State of Mysore, India, and has taken a contract for all of the steel plate and structural work for a 350-ton blast furnace for the Indian Iron & Steel Co., to be erected about 125 miles from Calcutta, India. This furnace will be equipped with five 25 x 100 ft. hot-blast stoves, skip hoist, pig casting machine and all equipment that accompanies a modern up-to-date American blast furnace. This is one of a unit of three blast furnaces to be built by the Indian Iron & Steel Co., which will also build by-product coke furnaces and benzol plants, also a modern open-hearth steel plant and finishing mills. The works will be located at Asansol, province of Bengal, some miles from Calcutta and in the heart of the Indian coal fields. The plant will obtain its iron ore within 120 miles of the steel plant. Shipments of the material for the new blast furnace will not likely be started by the William B. Pollock Co. in less than six months, and so far the company has placed contracts for only one blast furnace. It is expected to have another plant completed, as outlined above, in the middle of 1921. The Indian Iron & Steel Co. is allied with Burn Iron & Steel Co., Calcutta, in which British and Indian capital is invested.

Russell E. Gardner and his sons, Russell E., Jr., and Fred W., of St. Louis, who operated the Chevrolet Motor Co., St. Louis, until the plant and business was sold to W. C. Durant, New York, are planning to resume the manufacture of automobiles, and probably will manufacture a small four-cylinder car, which is to be marketed at a very low price. An experimental and engi-

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neering plant for preliminary work has been estab-  
lished by the company in the building at Boyle Avenue  
and Forest Park Boulevard built for the Studebaker  
Corporation recently.

Import Restrictions on Ferromanganese Alloys  
Removed

WASHINGTON, April 1.—All restrictions on the im-  
portation of ferromanganese and spiegeleisen have been  
removed by the War Trade Board. Licenses for the  
importation of these commodities will be freely issued  
and importations from the United Kingdom, France,  
Italy, Belgium and Japan or their possessions, protec-  
torates colonies, or dominions, may be made under Gen-  
eral Import License PBF No. 34.

Since March 31 the Vulcan Steel Products Co., Inc.,  
and the Vulcan Trading Corporation, general exporters  
and importers, have occupied new general offices at  
136 Liberty Street, New York.

## CORRESPONDENCE

### Prohibition and Industry

*To the Editor:* Accompanying my letter, "Prohibition and Industry," in THE IRON AGE, Feb. 13, you published a reply editorial, "Opposition to Prohibition."

Among the several angles from which I view the constitutionality of national prohibition, you reply under (1) Physiology—"that it has been conclusively demonstrated that alcohol is a positive depressant of heart mechanism."

I wish to say in reply that when I wrote the above letter I was well aware of this claim, also that on it the authorities are divided. There is so little generally known about heart mechanism that the question arises whether alcohol is capable of producing this result directly or indirectly, whether it is harmful or beneficial to the heart.

At an investigation held by the members of the Pennsylvania State Chamber of Commerce recently it was found that no conclusive evidence could be offered on this point.

By direct action I mean the effect of alcohol on the heart muscles or its controller nerves. By indirect action I mean the increase of nerve conductivity and also that of nervous flow in the central system (the secret of the joy of indulgence) and consequently such extra demands on the heart as would result in its temporary fatigue or depression after a certain length of time. This reaction on the heart, however, is not unlike the exercise of climbing steep inclines such as is recommended by physicians when one suffers from an attack of nervous exhaustion and the resulting lag of heart tone. During this form of exertion it is necessary to breathe unusually deep, while the heart action is correspondingly heavy. As in the case of alcohol, depression may follow this exertion, but by using the proper precaution, it is ultimately beneficial and strengthens the heart and nerves. In other words, the process appears to be Nature's true heart stimulant. This seems to be amply proved by the desire for less sleep or the tendency for the individual to rise earlier and the resulting ego for exercise or work following the moderate use of alcohol as in beer, or by those who do not use beer, its equivalent in concentrated liquors.

In this editorial you say, "If after a fair trial the people are not satisfied and wish to repeal the amendment, it will be done, but in the meantime resistance to the amendment or supplemental laws would be unpatriotic and anarchistic."

Since the publication of this statement the situation has been materially changed by the new revenue bill which went into effect Feb. 25. This measure provides for such increase of taxes on liquors that it may be justly regarded as practical wartime prohibition in itself. By practical prohibition I mean one which instead of being an expense and arousing embarrassing prejudice, embodies a substantial increase of revenue to the Government. In addition, it observes those potential principles of psychology that would probably make for the greatest success that can be expected of any prohibition measure.

By psychological principles I mean the feeling of contentment which is retained in the hearts of all citizens who, even though they realize that now liquors are put well beyond their ordinary reach because of the high cost, they know that it is not altogether forbidden them. It is also a business measure in the sense that it saves the country hundreds of millions of dollars invested in breweries and café equipment which would not only conserve real estate and other associated property values, but would enable them to pay their share of war taxes and to buy Government securities.

To replace the saloon with a substitute can never appeal to the psychologist as feasible. A man enters the café imbued with the independent feeling that he is a welcome customer and a stimulator of trade, if it is only to spend a few cents.

When he enters the much-discussed substitute club-

room he is taken up with the feeling that he will be forced to associate closer with his fellows than a tired man feels that he cares to or is advisable, and he is obliged to participate in games for pastime. This inevitably leads to gambling, feuds or the shunning of all such association.

National prohibition is essentially a form of "rescue" or welfare work, but somehow human nature is suspicious of just these things. A prominent high-class manufacturing firm of Ohio, some years ago, was idealistic and generous enough to provide a gymnasium and other welfare accommodations for its employees. The venture was not appreciated, and when urged upon them was called "hell fire" and shunned as an encroachment upon their individual liberty.

New York, March 20.

A. P. SHORE.

### Blast Furnace Runs and Income Taxes

*To the Editor:* The income tax law is inequitable in applying the period of a calendar year to a blast furnace operation. The farmer who plants a crop, reaps it and sells it knows what he has done when the year is over. The seasons settle the matter for him absolutely and finally; and in ordinary commercial business the same is true. But no merchant blast furnace knows what it has done in the way of profits except as it computes them blast by blast, which may be a period of one year, two, three or in some extraordinary cases, seven years. We know of a furnace in the South that in the year 1917 made approximately \$100,000. In the year 1918 it had continuous troubles with raw materials, its blowing engines went to pieces, and it could not get new parts, its operating costs went up amazingly, and it lost just as much as it had made the year before. The loss was absolute, as the Government had taken so much of the profits of the preceding year in taxes that there was no surplus fund to which these losses could be charged.

This particular furnace company is a small one without adequate reserve or capital. Were it allowed to compute its profits as of the period of its blast it would be able to survive, but being compelled to account to the Government year by year, it stands a very fair show of being ruined. One of the wisest iron masters in America told me once that no blast furnace making iron for the market ever knew what it had made until the figures were computed for the entire period of the blast—from the time the furnace was relined until it was relined again, ready for the next blast. All of which I believe to be true, and all of which certainly has a bearing on the way in which income taxes are computed.

JAMES A. GREEN, President.

Cincinnati, March 25. Matthew Addy Co.

The German Government has entered into an agreement with the principal trade unions by which the maximum length of the ordinary working day is fixed at 8 hr. for all establishments, and reductions in earnings through this diminution are not to take place, as already announced, according to the *London Iron and Coal Trades Review*. All workmen returning from the army are to be reinstated in the situations they occupied before the war, and the employers' and workmen's associations are to endeavor to fulfill this obligation to the full extent. A central committee is to be formed by the associations interested, which, in addition to the regulation of ordinary trade matters, is to deal as far as possible with demobilization and the maintenance of economic activity.

For the first time in many years, blast furnaces at Hubbard, Trumbull County, Ohio, now owned by the Youngstown Sheet & Tube Co., are both idle. One was banked recently because of lack of orders, while another has been down for several months for repairs. Six furnaces in the valley are idle, including in addition Tod furnace of the Brier Hill Steel Co., three stacks of the Republic Iron & Steel Co. at Haselton and one Youngstown Sheet & Tube furnace at East Youngstown.

# Railroad Administration and Steel Prices

Success of the Redfield Plan Hinging  
on Government Buying—Coal Producers  
Wisely Make Their Co-operation Conditional

WASHINGTON, April 1.—The price stabilization program of the Industrial Board, planned to stimulate business, has hit a snag in the attitude of the Railroad Administration. So far the Railroad Administration has refused to accept the Industrial Board's prices on steel or to be bound by the prices still to be fixed on coal and building material. This violates the fundamental idea of the original Redfield program to bind the Government departments to purchase at the prices approved by the board. It is particularly a menace to the whole project because the Railroad Administration would purchase normally a very considerable percentage of the country's production of coal and steel.

## Efforts to Commit Railroad Administration

All operations of the Industrial Board have been suspended to await a conference of the board and other Government officials with Director General Hines of the Railroad Administration upon his return to Washington. If Mr. Hines comes back in time this meeting will be held tomorrow. It will take place in the office of Secretary Glass of the Treasury Department, although the latter does not hold the position with reference to the Railroad Administration which his predecessor, Secretary McAdoo, had. In addition to Secretary Glass the conference will be attended by Secretary Redfield of the Department of Commerce, Fuel Administrator Garfield, the members of the Industrial Board and other representatives of the Government interested in the price stabilization program. Should the conference with Mr. Hines fail to secure his acquiescence, all further price stabilization will be abandoned. It will be too late, however, to cancel the steel figures. These are looked upon by the board as the voluntary quotations of the industry, which it can withdraw if it desires.

## A Strategic Maneuver

The members of the President's Cabinet discussed this situation at this afternoon's meeting, but no announcement was made concerning their views. It is presumed that they are siding with Secretary Redfield, whom they supported in his original program of the whole price stabilization plan. It was also intimated that Mr. Hines does not consider the steel price schedule too high for railroad purchases, but that the real basis for his opposition is part of a strategic maneuver to force President Wilson to call a special session of Congress as early as possible to secure the \$750,000,000 appropriation which he considers necessary for the proper operation of the railroads.

The details of the conflict with the Railroad Administration have been cabled to President Wilson, who had sanctioned the Industrial Board's project. This cablegram is being kept secret, although it is reported that Chairman George N. Peek of the board, and William M. Ritter, who was mainly responsible for the program, have threatened to resign if the Railroad Administration does not yield.

The same controversy arose a little more than a year ago when the Railroad Administration refused to accept the Fuel Administration's schedule of coal prices. At that time it was whipped into line by the direct action of President Wilson. As Fuel Administrator Garfield is again opposing the Railroad Administration's attitude it is not impossible that the same coercion will now be used. It is reported that Dr. Garfield has even threatened to renew the price fixing operations of the Fuel Administration, which were abandoned Feb. 1, if the Railroad Administration persists in declining to yield to the Industrial Board.

## Railroad Administration Conferee Represented Nothing

The conflict between the Railroad Administration and the Industrial Board came to light early last week when

the expected railroad orders for steel under the new price schedule failed to materialize. Both the Railroad Administration and the board, however, declined to come out into the open with the fight. Efforts on the part of the Industrial Board to induce Mr. Hines to commit himself proved futile. T. C. Powell, who represented the Railroad Administration and the other purchasing agencies of the Government on the board, said he had no power to commit the Railroad Administration. He merely submitted the figures to Mr. Hines. Mr. Powell had been put upon the board specifically to represent the purchasing operations of the Railroad Administration, but he finally declared that he had nothing to do with them and was interested only in raising money for the railroads.

Messrs. Peek and Ritter made a hurried trip to Chicago on Friday to confer with Mr. Hines, who was there on an inspection trip. The meeting resulted in nothing. A second meeting was planned but failed to materialize. Thereupon, Messrs. Peek and Ritter returned to Washington and conferred yesterday with Secretary Redfield. The session itself seems to have been a pessimistic one, although at its conclusion neither Secretary Redfield nor Mr. Peek would go further than to say that they hoped for a favorable solution at tomorrow's session. It developed, however, that the railroad officials insisted that lower prices for the railroads were more important than any Government policy.

## Coal Operators Take a Stand

The fight between the Industrial Board and the Railroad Administration became public property after the failure of a session of the coal operators with the Industrial Board to fix new fuel prices. At the meeting with the steel men in the preceding week the representatives of the industry had asked whether the railroad Administration would be bound by the prices agreed upon. They, however, were satisfied with the mere reply that it was "expected" that Mr. Hines' organization would do so. The coal operators were more vigorous in their questioning than the steel men had been. They demanded a promise that the railroads would not attempt to cut the new price schedule. To this Chairman Peek could give no binding answer and the conference ended. At its close the National Coal Association, representing the operators, made public the following statement:

Four hundred operators, members of the National Coal Association and representing every producing field in the United States, have been in conference in Washington for the past two days at the request of Secretary Redfield's Industrial Board, of which George N. Peek is Chairman. Harry A. Garfield, United States Fuel Administrator, met with Secretary Redfield's board. The purpose of this conference was to put into effect within the coal industry the broad principles involving readjustment which had been advocated by Secretary Redfield and approved by the President. The coal operators held one conference Wednesday afternoon with Chairman Peek and his board.

At this session the bituminous coal operators explained to the board that approximately 39 per cent of the total production of bituminous coal is consumed by the railroads of the United States and therefore would be purchased by the U. S. Railroad Administration. Under these circumstances, the operators consider it vital for the board and the industry to know at the outset whether or not the United States Railroad Administration would accept the decision of the conference as to reasonable and fair prices for coal and make its purchases of railroad fuel at those prices.

It developed at the meeting that in spite of Director General Hines's publicly announced policy in the purchase of railroad fuel, the United States Railroad Administration had adopted unfair practices, which would drive the price of railroad fuel below the cost of production. This would necessitate advancing the price of coal for the general consuming public to a point sufficient to absorb the loss



involved in the production of coal for railroad use. It was therefore apparent that unless the Railroad Administration would lend its co-operation and bind itself to accept the findings of the conference, no beneficial results for the general public could be obtained.

Such assurance of co-operation on the part of the Railroad Administration was not forthcoming. The operators accordingly made clear to the board their readiness to resume the consideration of the question of prices whenever the co-operation and support of the Railroad Administration and other Government departments buying coal, had been secured. The resolution in which the operators went on record to this effect is as follows:

"Resolved, By the representatives of the bituminous coal operators of the United States, in meeting assembled in Washington, March 27, 1919, at the request of the Industrial Board of the Department of Commerce, acting in conjunction with the U. S. Fuel Administrator, that the operators of the country declare themselves ready to go into conference with the Industrial Board with a view to co-operating with the Government in stabilizing prices of bituminous coal during the readjustment period, upon their being assured by the Industrial Board that the U. S. Railroad Administration and other Governmental agencies purchasing coal are also willing to co-operate."

#### Government Buying the Key

The Railroad Administration denied the charge of "unfair practices" but declined to commit itself concerning the future. It became apparent that without a definite acceptance by the Railroad Administration of the entire plan of the Industrial Board, the latter's operations would be futile. No amount of price stabilization for private consumption could make up for the demoralization which price cutting by the Railroad Administration would cause. The whole question of price was so definitely interwoven that the public could not be expected to buy at prices higher than the Railroad Administration would pay. At the same time it would wreck the whole Redfield idea of fixing prices at a point which the Government could convince the public would remain the minimum prices for the year.

In all the publicity which preceded the organization of the Industrial Board, Secretary Redfield laid stress upon the fact that the Government purchasing agents would be bound by the results and that these would form the basis for establishing public confidence in the fairness of the prices. The action of the Railroad Administration threatens to destroy this psychological value. It is not surprising that Secretary Redfield is on the warpath. Wednesday's session should prove highly interesting.

#### Sherman Act Enforcement

Another conflict which may impair the value of the board's efforts is the fact that so far Attorney General Palmer has not given out a public endorsement of the legality of the Redfield idea. At the time the steel men were in Washington, Chairman Peek and Mr. Ritter called on Attorney General Palmer to get a certificate of immunity. Mr. Peek labeled it a "social" call. As a matter of fact it was a meeting arranged solely for the purpose of discussing the legality of the board. It was, however, not an "official" meeting. Mr. Palmer declined to give the endorsement asked for, but promised a written opinion whenever the Industrial Board would submit a detailed question in writing. This has not yet been done and Mr. Palmer's opinion is still in abeyance.

#### Lower Building Material Prices

The Industrial Board held a series of sessions last week with the representatives of various building material industries. As a result it is planning to issue a schedule of lower prices for various building items provided the conference with Mr. Hines on Wednesday results favorably. The board determined that these prices should be issued at the same time instead of in a separate schedule as in the steel case, because it believed the psychological effect would be greater. So far nothing has been forthcoming concerning the size of the reductions.

The builders' hardware industry was represented by G. L. Sargent and E. C. Waldvogel, of New Haven, and C. B. Parsons and H. C. Taylor, of New York. The conference with the lumber representatives failed to result in a definite conclusion, because the men from the industry lacked authority. They were to return

later but so far no second session has been held. Preliminary conferences were also held with the cement, window glass, plate products, gypsum, sand and gravel industries.

#### Financing Railroad Equipment Orders

A corollary to the conflict between the Industrial Board and the Railroad Administration has come out of the difficulty which the Railroad Administration is having to finance its purchases from the various railroad equipment companies. The Railroad Administration wanted the latter to take "acceptances" in lieu of the cash which the failure of the Congressional appropriation withheld. The specialty companies, however, in turn, refused to accept these documents. This forced the abandonment of the acceptance idea. The equipment corporations are now trying to work out a new program for the Railroad Administration and the Treasury Department based on "certificates of indebtedness" similar to those which are being issued to the railroads in payment of rentals. The difficulty with this proposition, however, is that while the Railroad Administration can obligate its receipts for rental payments, it has no authority to do so for equipment purchases.

It is not impossible that this conflict over the financing of the railroads may be used by the Treasury Department to compel the Railroad Administration to be more amenable to the pressure of the Industrial Board.

#### Labor Department for High Prices

Despite the efforts of the Industrial Board and the Department of Commerce to stimulate business by lower price schedules, the Department of Labor persists in a publicity campaign to convince the public that the present high prices must be maintained. This has not helped the Redfield program but there seems to be no way to secure actual co-operation between the Departments of Commerce and of Labor. At the same time the building laborers here in Washington are volunteering their "co-operation" with the Industrial Board by threatening to absorb any saving that might be made in building material prices. The various building unions are demanding increases in pay, the latest being that of the carpenters for a \$1 a day higher wage.

Even if everything were plain sailing for the Industrial Board's project, the continued delay in actual operation is alone enough to threaten to make it ineffective. The first account of the Redfield plan for industrial conference appeared in THE IRON AGE of Feb. 6. Almost two months have elapsed since that announcement. During that time the situation has not improved, but the outlook for the success of this program seemed better at that time than now.

In an effort to enlist greater departmental co-operation with the Industrial Board, the following special "Co-operating Committee" was appointed, covering everything but the Railroad Administration: E. N. Hurley, United States Shipping Board; Col. F. C. Boggs, War Department; L. McH. Howe, Navy Department; George O. May, Treasury Department; Julius G. Lay, State Department; C. M. Weld, Interior Department; C. J. Brand, Department of Agriculture; J. A. Egerton, Postoffice Department; Cecil Barnes, Food Administration; M. K. Delattre, War Trade Board; E. E. Meyer, Jr., War Finance Corporation; H. P. Willis, Federal Reserve Board; Alex. Pugh, War Trade Board.

O. F. S.

#### Exhibit of Army Personnel Work

The National Association of Corporation Schools and the United Engineering Society have secured for public inspection the exhibit of army personnel work showing how the army brings the man and the job together; how men who claim skill in trades essential to the army are tested to determine the extent of their skill; how the intelligence and talent available are spread over the different army units; how officers are rated, and how this information is used. The exhibit will be open afternoon and evenings from April 1 to 12 at the Engineering Societies Building, 29 West Thirtieth Street, New York. There is no admission charge.

## Harbison-Walker Refractories' Annual Report

The 16th annual report of Harbison-Walker Refractories Co., Pittsburgh, for the year ended Dec. 31, 1918, shows combined profit and loss account for the 15 months ended Dec. 31, 1918, is as follows:

Earnings after deducting \$2,211,314.51 expenditures for ordinary repairs; also income and war profit tax..... \$7,207,722.13

### Less

Charge off for depreciation of plants and equipment.....	\$1,357,238.95	
Charge off for depreciation of mining and tram outfits.....	282,453.67	
Charge off for depletion of clay, coal and ganister properties.....	63,072.75	
		1,702,765.37
Net profit.....		\$5,504,956.76

### Deduct

Dividend on preferred stock (6 per cent per annum).....	\$720,000.00	
Dividend on common stock (7½ per cent).....	1,350,000.00	
Dividend on common stock (6 per cent extra).....	1,080,000.00	
		3,150,000.00
Net surplus for the 15 months after sharing dividends on preferred and also on common stock, now carried to surplus account.....		2,354,956.76

### Surplus Account

As at Sept. 30, 1917.....	\$10,017,075.23
Add:	
Net surplus for the 15 months as above.....	2,354,956.76
As at Dec. 31, 1918.....	\$12,372,031.99

President H. W. Croft, in his statement to the stockholders, says in part:

"Attention is called to the fact that this statement covers a period of 15 months, it having been deemed advisable to change our fiscal year, formerly ending Sept. 30, to correspond with the calendar year.

"During the above period three wage advances were made, making a total of seven advances in the years 1916, 1917 and 1918, which combined amounted to over 100 per cent. These wage advances were not all accompanied by corresponding advances in the selling price of brick, the last general advance in brick prices being in July, 1917. The conditions under which we operated, due to shortage of labor, car supply, coal and other material, were much less favorable than the preceding year, resulting in a considerably decreased output.

"These conditions, together with the fact that our income and war profit taxes were very much higher than the preceding year, make this statement, all things considered, a fairly satisfactory one."

## War-Time Troubles of Gulf States Steel Co.

The war brought many problems to the Gulf States Steel Co., according to the annual report for 1918. Although in 1917 58 per cent of the company's shipments were made to foreign countries, the only exports the following year were of steel expressly made for some of the Allies. Many domestic consumers were classified as non-essential manufacturers. The company was requested to make shell steel, for which its equipment was not adapted, and also steel for railroad equipment not suited to the works, and delivered to an unsuitable geographical point. It could not import its usual high-grade ferromanganese; steel prices were greatly restricted, billets being reduced from \$90 to \$47.50, Pittsburgh basis.

The company says it accepted 18,025 tons of material of unfamiliar character on which it lost \$109,343 in manufacture. Bad winter weather, lack of gas coal, and lack of labor restricted operations to a maximum of 80 per cent capacity. Freight advances amounted to 25 per cent for all classes of goods, while blast furnace raw materials carrying charges increased from 50 to 122 per cent, although these rates had been increased the preceding year by from 10 to 102 per cent. The iron-making companies of the Birmingham district have sought relief from this preferential, but none has yet been granted.

Net profits, after deductions for depreciation, taxes, and other reserves, decreased then from \$2,871,479 in

1917 to \$1,191,662 for 1918. During the last year a common stock dividend of 25 per cent was declared. There are 27 items of additions and repairs, the cost of the former amounting to \$582,266. Among them were a workmen's clubhouse, containing baths, swimming pool, social and recreation hall, library, class rooms, and photographic dark room.

The grand total of gross and net tons of output for 1918 was 1,122,705 tons, which is less than for 1916 or 1917. Following are the chief items of production: Coal, 307,672 net tons; coke, 168,061 net tons; pig iron, 72,341 tons; ingots, 167,930 gross tons. Average earnings per man increased from \$896.58 in 1915 to \$1,478.12 in 1918. The average number of men employed was 2375 in 1918, contrasted with 2678 in 1917.

## Virginia Iron, Coal & Coke Co. in 1918

In making the 1918 report of the Virginia Iron, Coal & Coke Co., Roanoke, Va., the president, John B. Newton, states: "Your company, like others of the kind, was confronted with difficulties of operation on every hand. Scarcity of labor, interrupted transportation and delay in getting supplies were conditions with which we had constantly to cope. But, through the loyal support and hearty co-operation of your officers and employees, these obstacles were, in large measure, successfully overcome, with the result that the year, from an operation and financial standpoint, was highly satisfactory."

At the beginning of the year, the books showed a debit to profit and loss of \$188,870, which was wiped out during the year, allowing the payment of 6 per cent dividends, and a credit to profit and loss of \$263,774. The sum of \$408,165 was spent for permanent additions and improvements at the mining plants, and \$316,520 for repairs and renewals to iron furnaces.

The company produced 205,277 tons of pig iron, 363,876 tons of coke, and mined 1,553,051 tons of coal. The cost of manufacturing pig iron exceeded the Government selling price and therefore shows a loss of \$75,650, but the profit earned on coke going into the manufacture of pig iron offset this loss by \$503,053.

## Labor Notes

The P. B. Yates Machine Co., Beloit, Wis., on March 24 made a voluntary distribution of an aggregate sum of \$50,000 among its employees as a bonus on 1918 earnings. The amount of the checks ranged from \$40 to \$125. The distribution was a complete surprise to the employees.

The National War Labor Board has awarded a wage increase of 55 cents per day from Oct. 1, 1918, to April 1, 1919, in the case submitted in reference to the Pero Foundry Co., Worcester, Mass., and also recommends that in 14 other local instances submitted by the workmen that same retroactive payment be made.

Following a vote of employees of all departments the 8-hr. day went into effect in practically the entire Steelton plant of the Bethlehem Steel Co., so that a greater number of men might secure employment during the lull in the steel business. The only departments not now operating on the 8-hr. basis are the coke ovens and blast furnace department.

The Employers' Association of St. Louis, whose membership includes 250 of the largest industrial concerns in and near St. Louis, employing more than 100,000 persons, will open a permanent employment bureau for discharged soldiers, sailors and marines on April 10, it is announced by A. J. Davis, president of the association.

The United Shoe Machinery Co., Beverly, Mass., announces that beginning Monday, March 31, it has established a labor schedule of 44 hr. per week in that factory.

A strike in several Connecticut Valley and western Massachusetts foundries was begun last week. The old agreement expiring in March was for a minimum wage scale of \$5 for a 9-hr. day, but during last summer this had been increased by several foundries to \$5.50. Demands made in past week were for \$5.50 for an 8-hr. day, and on this being refused the men went out.

# Iron and Steel Markets

## BUYING IS LIMITED

### Railroad Administration Has Not Sanctioned New Prices

#### Some Revision of Pig Iron Contracts—Exports at Domestic Prices

The second week of the new iron and steel prices has brought little broadening of demand. Inquiries and specifications have increased, but practically all the business offered is still recognized as having been held back awaiting the reductions.

Mill operations in a number of cases showed a further falling off in the last week of March, and the month as a whole compares unfavorably with February. Pig iron stocks grew steadily in the month, and while 17 furnaces blew out in February, more than a score followed in March, and April will add largely to the idle list.

The Railroad Administration's refusal to accept the Industrial Board's prices on steel or to be bound by those yet to be fixed on coal and building material seriously threatens the whole stabilizing program, since the railroads would buy normally over 25 per cent of the country's production of coal and 20 per cent of its steel. It is not surprising, in view of the jumble at Washington, that individual buyers are in no haste to spread sail.

That the railroad authorities may yet be brought into line, as was done by Presidential intervention in the coal dispute of last year, is still a possibility, but indications to-day are that if the Railroad Administration does not sanction the steel schedule, the Government efforts at price stabilizing will be abandoned.

Sellers of pig iron have been besieged with inquiries for the revision of contracts in line with the \$4.25 reduction. Important Central Western interests and a large Southern producer have announced their intention of doing this, and, as with the December reduction, the movement is likely to spread. Some furnaces, nevertheless, insist on their contracts as they stand, and with iron enough in stock to fulfill them, are shutting down.

Pittsburgh and Birmingham basing points have thrown the pig iron trade into confusion. Some sellers are discarding them and naming prices at furnace to meet competition.

British inquiries for pig iron are put at 100,000 tons, including 25,000 tons of hematite, but there is skepticism as to sales resulting.

Export companies continue to tell of inquiries, some of them considerable, in a variety of lines, but with little resulting business. Foreign buyers are groping for a firm trading basis, but credit uncertainties are a great obstacle.

A significant development is the putting through of foreign orders at domestic prices, whereas early in the year export steel brought \$5 a ton more. Thus the March 20 rail price was

made the basis of a sale of 10,000 tons of standard sections for Manchuria. The War Department also accepted the new price in disposing of 50,000 tons of 80-lb. rails originally ordered for the army in France but held at Atlantic port.

Chain manufacturers are in conference to-day (Wednesday) in New York with reference to new prices, but no agreement has been reached as yet.

Bolt and nut manufacturers after long conferences have made price reductions ranging from 18.5 to 22 per cent, corresponding to the two reductions made in their raw materials, one in December and one in March.

Heavy melting steel scrap, which last month fell so low that open-hearth steel works were led to use larger percentages, has advanced under this demand and is now \$2 or more above the low point. The War Department now estimates that forgings and castings that will be sold as scrap amount to 900,000 tons. The lots are well scattered, however, and sales need not cause demoralization.

Some British ferromanganese producers are offering standard 80 per cent alloy at \$150, seaboard, the first foreign offers in many months. Import restrictions have been removed. The American alloy, 78 to 80 per cent, is quoted by producers at \$150, delivered. Imports from Great Britain on pre-war contracts are now heavy.

The increased demand for copper in the past fortnight is a matter of hopeful comment among iron and steel producers in view of its bearing on their own trade. Yet in copper as in steel there is little resemblance thus far to a real buying movement.

## Pittsburgh

PITTSBURGH, April 1.

Some disappointment is being felt among the trade at the relatively small amount of new business in steel that has come out since the reductions in prices were made and also over the fact that opinion is pretty general that the new prices are not going to have the desired effect and bring out to any extent the orders that the steel mills and other manufacturing plants need. The whole situation now seems to be up to the Government and to the railroads, and there seems to be a very marked difference between Secretary Redfield's statement that the railroads and the Government as well would place orders, and that credited to Director General of Railroads Hines, who is quoted as saying that he does not propose to buy rails and other supplies at the new prices, but will only do so at competitive prices.

The next few days ought to bring out some interesting developments, which are very eagerly awaited by the trade.

While it is true a moderate amount of new business was placed with the mills just after the March 21 prices were announced, most of this was business that was purposely held up by jobbers and consumers awaiting the lower prices. The country does not seem to be in the proper mood for a period of business activity. The war is still the uppermost thought in the minds of the people, and will be until the peace treaty has



## A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron Per Gross Ton:	April 1, 1919	Mar. 25, 1919	Mar. 4, 1919	April 3, 1918
No. 2 X, Philadelphia...	\$31.90	\$31.90	\$36.15	\$34.25
No. 2 Valley furnace...	26.75	26.75	31.00	33.00
No. 2 Southern, Cin'tif...	30.35	30.35	34.60	35.90
No. 2 Birmingham, Ala. f.	26.75	26.75	31.00	33.00
No. 2 furnace, Chicago*	26.75	26.75	31.00	33.00
Basic, del'd, eastern Pa...	29.65	29.65	33.90	32.75
Basic, Valley furnace...	25.75	25.75	30.00	32.00
Bessemer, Pittsburgh...	29.35	29.35	33.60	36.15
Malleable, Chicago*	27.25	27.25	31.50	33.50
Malleable, Valley...	27.25	27.25	31.50	33.50
Gray forge, Pittsburgh...	27.15	27.15	31.40	32.75
L. S. charcoal, Chicago...	38.85	38.85	38.85	37.50

### Rails, Billets, etc.,

Per Gross Ton:	April 1, 1919	Mar. 25, 1919	Mar. 4, 1919	April 3, 1918
Bess. rails, heavy, at mill.	\$45.00	\$45.00	\$55.00	\$55.00
O-h rails, heavy, at mill.	47.00	47.00	57.00	57.00
Bess. billets, Pittsburgh...	38.50	38.50	43.50	47.00
O-h. billets, Pittsburgh...	38.50	38.50	43.50	47.00
O-h. sheet bars, P'gh...	42.00	42.00	47.00	51.00
Forging billets, base, P'gh.	51.00	51.00	56.00	60.00
O-h. billets, Phila...	42.50	42.50	47.50	50.50
Wire rods, Pittsburgh...	52.00	52.00	57.00	57.00

### Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	2.595	2.595	3.145	3.685
Common iron bars, P'gh...	2.35	2.35	2.90	3.50
Common iron bars, Ch'go...	2.50	2.62	2.92	3.50
Steel bars, Pittsburgh...	2.35	2.35	2.70	2.90
Steel bars, New York...	2.62	2.62	2.97	3.095
Tank plates, Pittsburgh...	2.65	2.65	3.00	3.25
Tank plates, New York...	2.92	2.92	3.17	3.445
Beams, etc., Pittsburgh...	2.45	2.45	2.80	3.00
Beams, etc., New York...	2.72	2.72	3.07	3.195
Skelp, grooved steel, P'gh.	2.45	2.45	2.70	2.90
Skelp, sheared steel, P'gh.	2.65	2.65	3.00	3.25
Steel hoops, Pittsburgh...	3.05	3.05	3.30	3.50

\*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	4.35	4.35	4.70	5.00
Sheets, galv., No. 28, P'gh.	5.70	5.70	6.05	6.25
Wire nails, Pittsburgh...	3.25	3.25	3.50	3.50
Cut nails, Pittsburgh...	4.45	4.45	5.00	4.00
Fence wire, base, P'gh...	3.00	3.00	3.25	3.25
Barb wire, galv., P'gh...	4.10	4.10	4.35	4.35

### Old Material, Per Gross Ton:

Carwheels, Chicago	\$21.00	\$21.00	\$21.00	\$29.00
Carwheels, Philadelphia	24.00	23.00	23.00	29.00
Heavy steel scrap, P'gh...	16.00	14.00	14.00	28.50
Heavy steel scrap, Phila...	16.00	15.00	14.00	28.00
Heavy steel scrap, Ch'go...	16.50	16.00	15.00	29.00
No. 1 cast, Pittsburgh	20.00	18.00	18.00	29.00
No. 1 cast, Philadelphia	22.00	22.00	21.00	29.00
No. 1 cast, Ch'go (net ton)	22.00	22.00	20.50	27.50
No. 1 RR. wrot, Phila...	22.00	21.00	20.00	34.00
No. 1 RR. wrot, Ch'go (net)	16.00	16.00	15.50	30.36

### Coke, Connellsville,

Per Net Ton at Oven:	Cents	Cents	Cents	Cents
Furnace coke, prompt	\$4.00	\$4.00	\$4.25	\$6.00
Furnace coke, future	4.50	4.25	6.00	6.00
Foundry coke, prompt	5.00	4.75	5.00	7.00
Foundry coke, future	5.50	5.50	7.00	7.00

### Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	15.62 1/2	15.37 1/2	15.75	23.50
Electrolytic copper, N. Y.	15.37 1/2	15.12 1/2	15.00	23.50
Spelter, St. Lou.s...	6.20	6.17 1/2	6.25	7.00
Spelter, New York...	6.55	6.52 1/2	6.60	7.25
Lead, St. Louis...	5.00	4.95	5.00	7.00
Lead, New York...	5.25	5.20	5.25	7.20
Tin, New York...	72.50	72.50	72.50	85.00
Antimony (Asiatic), N. Y.	6.25	6.25	7.12 1/2	13.00
Tin plate, 100-lb. box, P'gh	\$7.00	\$7.00	\$7.35	\$7.75

been signed, and then there will still be much work to do before the devastated countries will be in a position to buy in any considerable quantities.

Domestic capital is not accepting the statement that present steel prices are minimum for the remainder of this year, but has taken the position that the present is not an opportune time to go ahead with large projects and investors are simply keeping their money tied up, and will continue to do so until the peace treaty is signed, and general conditions are more favorable. There has not been any increase in operations among the mills, rather the outlook is altogether the other way. A number of blast furnaces will go out this month because they are unable to meet the new prices, and it is likely also that some finishing plants will close down soon for the same reason. The situation is far from being satisfactory and the outlook for the next two or three months, at least, is regarded with some doubt. Manufacturers say that any further reductions in prices will have to be borne largely by labor, and the Washington attitude is that present wage rates, while abnormally high, must not be disturbed. This is making the situation all the more complex, and how it will be eventually worked out is a huge problem.

**Pig Iron.**—The meeting of the Associated Manufacturers of merchant pig iron, held in the William Penn Hotel, of this city, on Wednesday, March 26, was very largely attended. Furnace representatives were present from Pittsburgh, Youngstown, Cleveland, Chicago, Buffalo, also from the South, and, in fact, from all pig iron producing centers. The chief question discussed at the meeting was the matter of contracts for pig iron made in the summer and fall of last year for delivery for first half of this year, and in some cases over all of this year. It developed that nearly all of these contracts contained a clause that in the event that the Government discontinued the regulation of prices, the last Government price should apply on any unshipped pig iron called for in the contracts. On advice from Washington it was declared as the sense

of the meeting that the lower prices on pig iron, effective from March 21, were not Government prices, and should not be considered as affecting existing contracts. However, since the meeting was held two Western producers of pig iron have agreed to revise prices on contracts to present prices, and it is also reported a leading Southern producer has also agreed to do so. This action may be followed by other pig iron makers, and the situation is certainly a hard one for merchant furnaces, some of whose costs for making iron in February were around \$29. Pig iron costs in March may have been slightly less than in February, due to lower coke, but a very large number of furnaces are absolutely out of it and expect to close very soon. One large maker of pig iron whose furnaces are in the Valley states that he will sell his ore, if possible, even at considerably less than what he paid for it, in preference to operating his furnaces at a loss of \$4 per ton or more. The lower prices on pig iron have not brought about any new inquiry to speak of, and are not expected to do so. The consumers view with a good deal of doubt the statement that present pig iron prices are minimum for the year, even if they are \$3 to \$4 per ton less than cost to many furnaces. The matter of basing points did not receive much attention at the pig iron meeting last week.

Basic pig iron, \$25.75; Bessemer, \$27.95; gray forge, \$25.75; No. 2 foundry, \$26.75; No. 3 foundry, \$26.25; and malleable, \$27.25; all per gross ton at Valley furnaces, the freight rate for delivery in the Cleveland and Pittsburgh districts being \$1.40 per ton.

**Ferroalloys.**—The local market is practically bare of inquiry. Consumers have stocks that will carry them practically over the remainder of this year, and some are offering alloys for resale in an effort to reduce their stocks. Two blast furnaces that make the lower grades of ferrosilicon are shut down, having large stocks on hand. Resale 78 to 82 per cent ferromanganese is being offered at about \$130 delivered, and resale 50 per cent ferrosilicon at about \$90 per gross ton delivered. We quote 78 to 82 per cent resale ferro-

manganese at about \$130, delivered, with a reduction of \$2 per unit for lower percentages. We quote resale 50 per cent ferrosilicon at \$90 to \$100 per gross ton delivered and 18 to 22 per cent spiegeleisen at \$42 to \$43. We understand makers of Bessemer ferrosilicon and silvery iron have not yet agreed upon lower prices, owing to absence of new demand.

**Billets and Sheet Bars.**—As yet the reduction of \$5 per ton in prices of semi-finished steel has not brought about any increased inquiry, the market being fully as quiet as before the reduction was made. Any increase in demand for semi-finished steel cannot come until the finishing mills are better employed. Steel mill operations in the Pittsburgh, Youngstown and Wheeling districts are on about a 60 per cent basis, a few concerns doing possibly a little better.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at \$38.50, 2 x 2 in. billets at \$42; sheet bars, \$42; slabs, \$41, and forging billets \$51 base, all f.o.b. at mill, Pittsburgh or Youngstown.

**Plates.**—So far as we can learn there has been no increase whatever in the demand for plates since the lower prices were made, and there is some doubt expressed as to whether there will be any material increase until it is known whether the Government intends to come in the market at the new prices. If the report is true that the Railroad Administration will place orders for cars, rails and other products only on a competitive basis, it would seem that the manufacturers of plates, who consented to a reduction of \$7 per ton in prices, have been deceived. Absolutely no new business for cars or other equipment that requires plates is in the market, and the whole trade is waiting on Washington developments. We quote ½-in. and heavier sheared plates at 2.65c. at mill.

**Structural Material.**—Much doubt is expressed as to whether the reduction of \$7 per ton will have the desired effect of bringing out new business. The sales managers of several of the larger fabricating steel interests say they see no sign of increased building operations, and frankly say they do not expect it. They point out that capital is not in a mood to invest in new office buildings, apartments and other structures and the railroads are not apparently getting ready to place contracts. No new work is in sight in this district, with a single exception of a bank building at Youngstown, and it is reported that this had been held up temporarily.

We quote beams and channels up to 15 in. at 2.45c. at mill, Pittsburgh.

**Iron and Steel Bars.**—The reduction of \$7 per ton on steel bars has not as yet brought about any material increase in new business. It is true that some business in steel bars was placed right after the reduction was made, but this was largely business that was held up waiting for the lower prices. Makers of iron bars outside the Pittsburgh district are now understood to be quoting 2.55c. for Western shipment and 2.35c. for Eastern shipment. We quote steel bars rolled from billets at 2.35c. and from old steel rails 2.45c. f.o.b., Pittsburgh.

We quote soft steel bars rolled from billets at 2.35c.; from old steel rails, 2.45c. Bar iron is quoted at 2.35c. for Eastern shipment and 2.55c. for western shipment.

**Sheets.**—Some mills report a slight increase in new orders since the \$7 per ton reduction in prices. Consumers and jobbers seem to accept with some doubt the statement that present prices are minimum for this year, and are not yet disposed to place orders beyond actual needs. Export inquiry for sheets is fairly heavy, and it is understood domestic prices are being quoted on these. Independent sheet mills are operating only from 50 to 60 per cent of capacity and from 12 to 15 turns per week. Prices on sheets in effect from March 21 are given on page 918.

**Tin Plate.**—Some few contracts for moderate quantities for delivery over second quarter have been made since the \$7 per box price was fixed, but as yet the large consumers are not in the market. Stocks in the hands of consumers were heavy early in the year, and these have not all yet been worked off. Present rate of operations among the tin plate mills ranges from 50

to 60 per cent on about 15 turns per week. It is firmly believed that within 60 days demand will show a large increase. We now quote tin plate at \$7 per base box, f.o.b., Pittsburgh, while prices on terne plate are given on page 918.

**Wire Rods.**—New inquiry for high carbon rods is fairly active but for soft rods is very quiet. Common basic or Bessemer rods are now \$52 per gross ton; free cutting Bessemer screw rods \$57; chain rods and screw, rivet and bolt rods are \$60 per gross ton. Prices on high carbon rods are arbitrary and range from \$60 upward, according to carbons.

**Wire Products.**—Makers of wire and wire nails state there has been a slight increase of new business since the reduction of \$5 per ton in prices was made, but they regard much of this as business that was held up waiting for the lower prices. As yet there are no signs of jobbers or consumers placing orders beyond actual needs. The new demand for wire is fairly heavy, but for wire nails it is quiet, and some mills are carrying quite heavy stocks of the latter. It develops that the differential on roofing nails 1 in. and longer, including large-head barbed roofing nails, is now \$1.50, and \$2 for shorter than 1 in. over the base price of wire nails, which is \$3.25 per keg f.o.b. Pittsburgh. Prices on wire products are given in detail on page 918.

**Hot Rolled Strip Steel.**—As yet demand has not shown any material increase since the reduction of about \$10 per ton was made in prices. Makers believe that inquiries indicate more buying in the near future.

We quote hot-rolled strip steel at \$3.30 per 100 lb.

**Cold Rolled Strip Steel.**—The reduction of \$12 per ton has brought out a moderate amount of new business, but it is believed much of this was being held up waiting for the lower prices.

We quote cold-rolled strip steel at \$5.65 base per 100 lb., f.o.b. Pittsburgh, for 1½-in. and wider, 0.100 in. and thicker hard tempered in coils under 0.20 carbon and under. Boxing charge 25c. per 100 lb.

**Nuts and Bolts.**—At a final conference of manufacturers of nuts and bolts held in Pittsburgh on March 27 new discounts were adopted that show reductions ranging from \$10 to \$15 per ton or more. Makers believe these heavy reductions in prices will very soon be reflected in an increased demand. Considerable new business came out after the reductions were made, but it is believed much of this was held up in the waiting. The new discounts on nuts and bolts, effective from March 28, are given on page 918.

**Shafting and Screw Stock.**—There has been some increase in demand for shafting since the reduction of \$7 per ton was made, and manufacturers believe that the new demand will still further increase. For some time most of the new buying in shafting has come from the automobile trade. Discounts in effect from March 21 are as follows:

We quote cold-rolled shafting at 28 per cent off list in carloads and 21 per cent in less than carloads, f.o.b. Pittsburgh.

**Hoops and Bands.**—The new price on steel hoops and bands was incorrectly given in our report last week as 3.25c. and should have been 3.05c., the reduction over the former price having been \$5 per ton. It is said new orders have been coming in a little more freely since the reduction in prices was made. We now quote steel hoops and bands at 3.05c., f.o.b. Pittsburgh.

**Spikes.**—Prices have again been revised by the manufacturers, they having agreed that the \$3.25 price per 100 lb. was too low, in view of present high costs. The Grand Trunk Railroad came in the market recently for about 4500 kegs, but has not yet placed the order. Demand of all kinds is light, and it has been for some time, manufacturers not operating to more than about 50 per cent of capacity. The new prices finally adopted by the manufacturers are as follows:

We quote Standard spikes, 9/16 x 4½ in. and also small spikes \$3.35 base per 100 lb. in carload lots of 200 kegs or more plus usual extras.

**Iron and Steel Pipe.**—Some mills report a slight increase in new orders for both iron and steel pipe since the reduction of \$7 per ton was made. The demand for oil country goods is reported heavy, and some mills are engaged on these for 45 to 60 days on some sizes. New inquiry for line pipe is very active, the Texas Co. having an inquiry out for 30 miles or more of 2, 4 and 6 in. Discounts on iron and steel pipe, effective from March 21, are given on page 918.

**Boiler Tubes.**—There has been a slight increase in new orders for both iron and steel tubes since the reduction of \$7 per ton, effective March 21. The new discounts on iron and steel tubes are given on page 918.

**Old Material.**—The local scrap market has completely reversed itself in the past week or 10 days, and from a buyer's market it is now strictly a seller's market, and prices on nearly all grades of scrap, especially for steel mills, have advanced in the past week from \$1 to \$2 or more. Consumers who for over three months refused to consider purchases of scrap have come in the market recently as buyers, and have taken in some fairly good-sized lots. Heavy steel scrap which two weeks ago was reported sold as low as \$14, is very strong to-day at \$16 per gross ton, with some sellers holding for \$17. Prices on low phosphorus melting scrap, No. 1 busheling, borings and turnings, and some other grades, are up fully \$2 a ton from the lowest point. The leading consumer of borings and turnings at West Breckenridge, Pa., has been a heavy buyer lately, and is said to have bought 10,000 to 15,000 tons each of borings and turnings, paying as high as \$10.50 for turnings and \$11 or more for borings, delivered. It is said also that the leading consumer has quietly picked up a very large amount of heavy steel melting scrap in the past two weeks, estimated by some dealers at 20,000 tons, or more, and is said to have paid up to \$17 delivered, on some of its last purchases. We note sales of upward of 10,000 tons of turnings at \$9.50 to \$10.50, and the same quantity of borings at \$10 to \$11.50 delivered to consumers' mills. We also note a sale of 500 tons of heavy steel melting scrap at \$16, delivered, and 1000 tons of low phosphorus (bloom and billet ends and heavy plate ends, ¼-in. and heavier) at about \$22 delivered. Dealers firmly believe that prices on nearly all grades of scrap are due for a further advance. Prices quoted by dealers to consumers for delivery to mills in the Pittsburgh district, and other consuming points that take Pittsburgh freights, are as follows:

Bessemer steel, melting, Steubenville, Ky.	
Edinboro, Brackenridge, Monaca, Midland and Pittsburgh, delivered	\$16.00 to \$16.50
No. 1 cast, for steel plants (nominal)	20.00 to 21.00
Breeding rails, Newark and Cambridge, Ohio; Cumberland, Md.; Franklin, Pa., and Pittsburgh	16.00 to 16.50
Compressed steel	13.00 to 13.50
Billets, sheet, sides and ends, f.o.b. consumers' mills, Pittsburgh district	11.50 to 12.00
Billets, sheet stamping	10.50 to 11.00
No. 1 busheling	14.00 to 14.50
Refractory grate bars	14.00 to 15.00
Low phosphorus melting stock (bloom and billet ends, heavy plates) ¼ in. and heavier	22.00 to 23.00
Drop axles	29.00 to 30.00
Machine axles, steel	28.00 to 29.00
Steel car axles	25.00 to 26.00
Refractory malleable	15.00 to 15.50
Machine shop turnings	10.50 to 11.00
Cast iron wheels	20.00 to 21.00
Steel wheels	17.00 to 18.00
Steel drop ends (at origin)	18.00 to 18.50
Steel axle turnings	12.00 to 13.00
Breakable cast	18.00 to 19.00
Cast iron borings	11.00 to 11.50
No. 1 railroad wrought	19.00 to 19.50

**Coke.**—A number of contracts for blast-furnace coke that contain a clause to the effect that prices on these contracts are to be revised monthly, based on the general market, have been revised to the basis of \$4.25 per net ton for blast furnace coke for April shipment, while a few have been revised to \$4.50 per net ton for April delivery. There is still a good deal of spot coke to be had, which is loaded on cars and has to be moved, and for this producers ask \$4 to \$4.25 per net ton at

oven. However, the amount of spot coke available is steadily getting less, as nearly every day more ovens are being blown out, and the output of coke is being considerably cut down. Some special grades of furnace coke for spot shipment bring \$4.25 per net ton at oven. The contention of coke producers that standard grades of furnace coke should bring at least \$4.68 per net ton at oven, being on the basis of about 5½ tons of coke to a ton of basic iron, is not seriously taken by consumers, who state they would be foolish to pay this price for coke when they can buy it for delivery at \$4.25, and for spot shipment at \$4 per net ton at oven. We quote best grades of blast furnace coke at \$4 to \$4.25 in net tons at oven for prompt shipment, and \$4.50 per net ton on contracts for April delivery. Best grades of 72-hr. foundry coke are selling at \$5, and slightly higher, in net tons at oven.

## Birmingham

BIRMINGHAM, ALA., April 1.

**Pig Iron.**—A considerable increase in inquiry has featured the first ten days of the new price schedule and sales of steel to metal fabricators have been made regularly, showing a renewal of activity in steel-finished products lines. Pig iron has not been as active, although the Northern agency of a Southern producer made a sale of 5000 tons. The usual iron sale in the Birmingham district has been in the neighborhood of carlots to 300 tons. All but one interest report booking some orders for prompt shipment and all agree that stability has been imparted and a tendency to buy created. In fact, sales in strictly competitive territory in the North had been made prior to the Washington conference by Eastern companies close to the minimum just established. Costs of production are such that it is their general claim that the new prices allow little or no profit. Low-cost Southern production is a thing of the past and competition must be met if Southern furnaces remain in business. The outlook is altogether better than it has been since the signing of the armistice. The Gulf States Steel Co. blew out its Gadsden basic stock on the last of the month because it has sufficient iron on hand to operate the finishing mills for some time. The Alabama Co. has blown out at Ironaton, but will manufacture both Clifton and Etowah brands at Gadsden. None of the idle Woodward stacks had resumed at the end of the month. The 70,000 tons of basic quoted on for foreign delivery has not been sold. We quote per gross ton f.o.b. Birmingham district furnaces, as follows:

Foundry, 1.75 to 2.25 silicon	\$26.75
Basic	25.75

**Cast-Iron Pipe.**—The cast-iron pipe trade feels a real buoyancy. Customers out of the market for as long as three to four years have sounded the water-pipe makers and a number of southwestern municipal orders have been placed. Water pipe has been marked down \$5 per ton and sanitary pipe down \$10 per ton. The sanitary pipe makers report a very active inquiry and undisputed evidence of considerable early buying.

**Old Material.**—There has been little change in the scrap market. No. 1 cast remains on the active list owing to its increased use in foundry mixtures, but steel melting scrap is more or less listless. There has been a good deal of trading among the dealers themselves, and yards are taking on stocks as they are procurable at present prices. The new iron and steel prices have not affected the scrap market unless it has been to steady prevailing quotations. We quote per gross ton f.o.b. Birmingham district yards, prices to consumers, as follows:

Steel rails	\$10.50 to \$11.00
No. 1 heavy steel	10.00 to 10.50
Cast iron borings	6.00 to 6.50
Machine shop turnings	6.00 to 6.50
Stove plate	13.00 to 13.50
No. 1 cast	19.00 to 19.50
Car wheels	19.00 to 19.50
Tramcar wheels	18.00 to 18.50
Steel axles	28.00 to 30.00
No. 1 wrought	18.00 to 18.50



## Chicago

CHICAGO, April 1—(By Wire).

Insufficient time has elapsed for much new business to develop as a result of the recent price reductions. Inquiries, however, have increased appreciably, and specifications on old contracts are coming in in larger numbers. There is a large amount of building in prospect, but the failure of materials other than steel to decline in price has acted as a deterrent to activity in that direction. Bids were taken today on 9000 tons required for the Butler Brothers' Building. Of all finished steel, wire products are showing the most activity, not only in inquiries appearing, but also in considerable business being done. The leading interest continues to operate at about 80 per cent of capacity.

A noteworthy development in the pig-iron market was the announcement of two leading distributors that the price reductions would be applied on all deliveries made after March 21. This action came as a surprise to most of the trade, which had been given to understand that the new prices would not be retroactive. It is the opinion of experienced pig-iron men that the application of the new price to contracts will cause, sooner than otherwise would have been the case, the forcing out of blast of a number of high-cost furnaces.

Old material is showing slightly increased strength, principally because of speculative buying on the part of dealers.

**Ferroalloys.**—The quoted price of 80 per cent ferromanganese continues at \$150 delivered, but resales have been made below that figure. Altogether only a small tonnage is moving. Makers of ferrosilicon adhere to \$125 to \$130 for 50 per cent, but resale lots are reported to have been taken at around \$100. Spiegeleisen, 16 to 18 per cent, commands \$40 to \$45. Quote accordingly.

We quote 80 per cent ferromanganese nominal at \$150 delivered; 50 per cent ferrosilicon at \$125 to \$130, delivered, and 16 to 18 per cent spiegeleisen at \$40 to \$45 furnace.

**Pig Iron.**—Contrary to what was generally expected by the trade, Pickands, Brown & Co. have announced that on all deliveries made after March 21 prices, until further notice, will be revised to conform with the new price level. The proviso until further notice is taken to mean that if prices should rise before deliveries are made those advances would be added to the new price. The contracts will stand, but customers will receive credit memoranda. Similar action was taken by the Tennessee Coal, Iron & Railroad Co. The move of these two companies has not been received with equanimity by representatives of some Southern furnaces, which are, they assert, operating on a basis close to production cost. They point out that they have just spent three months revising old contracts to conform with the price reduction of late December, and that a new revision will mean the duplication of a difficult and involved task. On behalf of the revision it is asserted that as was the case when prices were reduced at the first of the year, it would be an injustice to established customers to exact from them higher prices than from new buyers who may now come into the market. It is argued further that the readjustment of prices was undertaken to benefit the entire iron and steel industry, of which the foundry trade forms a large and important part. One Southern producer has not yet revised its prices, but most of the contracts on its books were closed before the silicon differentials were advanced. Makers of Lake Superior charcoal iron report that they will be unable to ship against new business until the second half of the year, and for that delivery they quote \$29.25, furnace, for silicon averaging 1.50 per cent. The change in the price level has not brought out many new orders, but there has been a substantial increase in inquiries. Melters, in many instances, have large stocks on hand and have requested furnaces to withhold delivery on orders placed, with the result that the latter are piling iron. A Milwaukee consumer is inquiring for 1800 tons of foundry, and a Chicago melter for 800 tons. There is no demand for malleable. The steel works furnace, which has been

on foundry recently, has been put back on basic.

The following is the letter sent to those having contracts with Pickands, Brown & Co.:

In conformity with the agreement reached last week between the Industrial Board of the Department of Commerce and the general steel committee of the American Iron and Steel Institute, we are reducing your price of foundry pig iron to \$26.75 per ton of 2240 lb., f.o.b. cars, furnace, with established schedule of silicon differentials, taking effect with shipments on and after March 29 and continuing until further advised.

Great reductions were put into effect in the expectation that the demand for iron and steel products would be thereby stimulated, and we trust it may be a material aid in bringing about a resumption of your normal activities.

The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable and steel-making irons, including low phosphorus, which are f.o.b. furnace, and do not include a switching charge averaging 50c. per ton:

Lake Superior charcoal, average silicon 1.50, second half delivery, f.o.b. furnace, average freight to Chicago \$2.50 (other grades subject to usual differentials) .....	\$29.25
Lake Superior charcoal, first half, nominal .....	28.85
Northern coke foundry, No. 1 silicon, 2.25 to 2.75 .....	28.00
Northern coke foundry, No. 2 silicon, 1.75 to 2.25 .....	26.75
Northern high-phosphorus foundry .....	26.75
Southern coke, No. 1 foundry and No. 1 soft silicon, 2.75 to 3.25 .....	34.75
Southern coke, No. 2 foundry, silicon, 2.25 to 2.75 .....	33.00
Southern foundry, silicon, 1.75 to 2.25 .....	31.75
Malleable, not over 2.25 silicon .....	27.25
Standard Bessemer .....	27.95
Basic .....	25.75
Low phosphorus (copper free) .....	48.25
Silvery, 7 per cent .....	41.15 to 41.55

**Plates.**—In common with other steel products, plates are the subject of increased inquiries, although actual orders have not yet materialized to any great extent as a result of the price adjustment.

The mill quotation is 2.65c., Pittsburgh, the freight to Chicago being 27c. per 100 lb. Jobbers quote 3.67c. for plates out of stock.

**Structural Material.**—Fabricators are buying in small lots to build up stocks, and in general business is somewhat better than a week ago. The Wisconsin Bridge & Iron Co. will fabricate 200 tons for two head frames for the Standard Oil Co., Schoper, Ill. Bids were taken yesterday by the general contractors for 9000 tons required for the Butler Building and for 500 tons for a viaduct in connection. There is little prospect of the construction of additional box cars in view of the large amount of new equipment now standing idle on the railroads.

The mill quotation is 2.45c., Pittsburgh, which takes a freight rate of 27c. per 100 lb. for Chicago delivery. Jobbers quote 3.47c. for material out of warehouse.

**Bars.**—Common bar iron is quoted at 2.55c. to 2.60c. Chicago, although it is probable that 2.50c. could be done on a large lot. Rail carbon bars are quoted at 2.45c. mill. Business in all kinds of bars is dull, a demand not yet having developed as a result of the price reduction.

Mill prices are: Mild steel bars, 2.35c., Pittsburgh, taking a freight rate of 27c. per 100 lb.; common bar iron, 2.50 to 2.60c., Chicago; rail carbon, 2.45c., mill. Jobbers quote 3.37c. for steel bars out of warehouse.

**Sheets.**—The leading independent maker is operating its mills full, but there is as yet no great influx of business as a result of the lower quotations.

Jobbers quote Chicago delivery out of stock: No. 10 blue annealed, 4.57c.; No. 28 black, 5.37c., and No. 28 galvanized, 6.72c.

Mill quotations are 4.35c. for No. 28 black; 3.55c. for No. 10 blue annealed, and 5.70c. for No. 28 galvanized.

**Wire Products.**—All of the mills report increased activity as a result of the price reductions. The requirements of the spring season are resulting in a heavy demand for nails, staples, barbed wire, light fencing, etc., from jobbers, who are replenishing their depleted stock. For prices, see finished iron and steel, f.o.b. Pittsburgh, page 918.

**Rails and Track Specialties.**—Inquiries for track sp

cialties are more numerous. The first quotations since the general reduction made for spikes, track bolts and tie plates, were tentative. Spikes and bolts were subsequently advanced \$1 each, while the price of tie plates, both steel and iron, was fixed at 2.75c. f.o.b. maker's. Mills quote iron tie plates 2.75c.

Standard railroad spikes, 3.35c. Pittsburgh. Track bolts with square nuts, 4.35c. Pittsburgh. Steel tie plates and angle bars, 2.75c., Pittsburgh and Chicago; tie plates, iron, 2.75c. f.o.b. makers' mills. Light rails, 2.45c., f.o.b. makers' mills with usual extras.

**Cast-Iron Pipe.**—Fort Wayne, Ind., has awarded 1200 tons to the United States Cast Iron Pipe & Foundry Co. Saginaw, Mich., has taken no action on bids for 350 tons received March 25. Spencer, Iowa, will relet 100 tons April 11.

We quote per net ton f.o.b. Chicago, ex-war tax, as follows: Water pipe, 4-in., \$59.80; 6-in. and larger, \$56.80; class A and gas pipe, \$1 extra.

**Bolts and Nuts.**—A leading maker is revising prices in unfinished contracts to conform with the new schedule recently adopted. It is declared that if the manufacturers are to make a profit at these new levels it will be necessary for them to operate at capacity. The aggregate of their reductions from war prices is far in excess of the reduction of \$5 on wire rods. Too little time has elapsed since the price readjustment to determine the effect upon business. For mill prices see finished iron and steel, f.o.b. Pittsburgh, page 918. Jobbers quote:

Structural rivets, 4.87c.; boiler rivets, 4.97c.; machine bolts up to  $\frac{3}{4}$  x 4 in., 45 and 5 per cent off; larger sizes, 40 off; carriage bolts up to  $\frac{3}{4}$  x 6 in., 40 and 10 off; larger sizes, 35 off; hot pressed nuts, square, tapped, \$1.28 off; hexagon tapped, \$1.08 off; coach or lag screws, gimlet points, square heads, 40 and 10 per cent off. Quantity extras for nuts are canceled.

**Old Materials.**—The situation is but little changed, the mills doing very little buying, although the dealers continue active in purchasing. The activity of the latter serves to give the market a certain strength which it would not otherwise have. It is reported that the leading interest is making inquiry for a large tonnage of melting steel for which it is understood to be willing to pay \$16. The dealers, however, are holding for up to \$17. Cast scrap continues strong and a few advances are noted in other grades. Rolling mill grades are especially quiet so far as the mills are concerned. Yard dealers have been doing some speculative buying of brake shoes, couplers, knuckles, etc. In the week the trade has been considering a large list from the Burlington, which includes 1150 tons of re-rolling rails, also lists from the C. and E. I., the C. and Northwestern, and Pennsylvania lines.

We quote delivery in buyers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Iron rails	\$21.00 to \$22.00
Relaying rails	45.00 to 50.00
Carwheels	21.00 to 22.00
Steel rails, rerolling	17.00 to 17.50
Steel rails, less than 3 ft.	17.50 to 18.00
Heavy melting steel	16.50 to 17.00
Frogs, switches and guards cut apart	16.00 to 16.50
Shoveling steel	15.50 to 16.00

#### Per Net Ton

Iron angles and splice bars	\$19.00 to \$20.00
Steel angle bars	15.00 to 15.50
Iron arch bars and transoms	22.50 to 23.50
Iron car axles	28.00 to 29.00
Steel car axles	23.50 to 24.50
No. 1 busheling	14.00 to 14.50
No. 2 busheling	9.50 to 10.00
Cut forge	14.50 to 15.00
Pipes and flues	12.50 to 13.00
No. 1 railroad wrought	16.00 to 16.50
No. 2 railroad wrought	14.50 to 15.00
Steel knuckles and couplers	17.50 to 18.00
Coil springs	18.50 to 19.00
No. 1 cast	22.00 to 22.50
Blender punchings	18.00 to 19.00
Automotive tires, smooth	16.50 to 17.00
Machine shop turnings	6.00 to 7.00
Cast borings	9.25 to 9.75
Serve plate and light cast	16.00 to 16.50
Grate bars	15.25 to 15.75
Brake shoes	14.00 to 14.50
Railroad malleable	15.50 to 16.50
Agricultural malleable	15.00 to 15.50
Country mixed	11.00 to 12.00

## Philadelphia

PHILADELPHIA, April 1.

There has been a moderate improvement in orders and inquiries for steel products during the past week. One company reports that new business each day last week equalled shipments for the first time since the war ended. Improvement was particularly notable in steel bars and wire products. Several consumers of strip steel have anticipated their requirements for second quarter, the first forward buying reported. Inquiry for pig iron has also improved but only a few small orders have developed. British inquiries for steelmaking iron, one from J. P. Morgan & Co., bankers, for 25,000 tons, have appeared. The aggregate of British inquiry is about 100,000 tons, but there may be some duplication. About 2000 tons of foundry iron is up for quotations, some for delivery into third quarter. Revision of prices on pig iron contracts is again to the fore, but a majority of Eastern producers and distributors is holding out against such revision. Some have never granted the \$3 reduction which went into effect Jan. 1.

The scrap trade is taking a spurt and prices are again advanced, No. 1 heavy melting steel being quoted at \$16 to \$17.

Reports as to railroad buying are somewhat discouraging. Sales agents of a leading independent steel company at a conference last week agreed that substantial purchases by the Railroad Administration are essential in establishing confidence among general buyers. So far, the railroads have not been permitted to buy, and in one instance the regional board has transferred plates from one Eastern road to another to avoid purchasing. Incidentally, these plates are on an old contract, considerably below the present price.

**Pig Iron.**—Eastern Pennsylvania furnaces have definitely decided to sell basic and foundry pig iron on a Pittsburgh basis, making the price for basic delivered in the Philadelphia district \$29.65 and No. 2 plain foundry, 1.75 to 2.25 per cent silicon, \$30.65; No. 2X, 2.25 to 2.75 per cent silicon, \$31.90 and No. 1 foundry, 2.75 to 3.25 per cent silicon, \$33.65. Some Virginia furnaces will meet these prices on foundry iron in the Philadelphia district and in the New York and New England territory will probably meet competitive quotations of Buffalo furnaces. At least two of the Virginia furnaces, however, will continue to quote on a Birmingham basis, presumably for the protection of existing contracts, as they cannot hope to book any new business at those prices. Western Pennsylvania furnaces are expected to quote on a furnace basis, and thus will be able to deliver iron in this district at \$1.10 below the prices quoted by Eastern Pennsylvania furnaces. A number of pig iron makers assert they cannot come out whole at the new prices, and as a result at least six nearby merchant furnaces will go out of blast within the next fortnight. Consumers are asking for revision of contracts to the new prices, but sellers here are making a strong stand against this. Some have not revised contracts to meet the \$3 reduction which went into effect Jan. 1. Inquiry has improved but only a few carloads of foundry iron have so far been sold at the new prices. Inquiries for foundry iron received early this week aggregate about 2000 tons, some for delivery into third quarter. British inquiries for steelmaking iron totalling about 100,000 tons are in the market, but there is believed to be some duplication due to more than one exporter working on the same inquiry. One inquiry for 25,000 tons comes from J. P. Morgan & Co., bankers. In this case, hematite iron is specified. We quote standard grades of iron for delivery in the Philadelphia district, except low phosphorus iron, which is quoted f.o.b. furnace.

Eastern Penna. No. 2 X (2.25 to 2.75 sil.)	\$31.90
Eastern Penna. No. 2 plain (1.75 to 2.25 sil.)	30.65
Virginia No. 2 X (2.25 to 2.75 sil.)	\$31.90 to \$34.50
Virginia No. 2 plain (1.75 to 2.25 sil.)	30.65 to 32.25
Basic	29.65
Gray forge	29.65
Standard low phosphorus (f.o.b. furnace)	46.75
Copper-bearing low phosphorus (f.o.b. furnace)	43.75

**Ferroalloys.**—Producers are now asking \$150 per ton delivered for 78 to 82 per cent ferromanganese, with a reduction of \$2 per unit when the manganese



content is below 78 per cent. Thus, 70 per cent is quoted at \$134. Resale material is reported to have been offered considerably below this price. There is a slightly improved demand for spiegeleisen in carload lots. Producers are quoting \$40, freight allowed, for 18 to 22 per cent. Two lots of British ferromanganese, one of 480 tons, valued at \$78,837, and another of 1000 tons, valued at \$170,328, were received at this port last week.

**Coke.**—Though nearly all contracts for blast furnace coke have recently been revised from \$6 to \$5 a ton, Connellsville, blast furnace operators, it is stated, will ask for a further reduction of about \$1 a ton to offset the recent reduction of pig iron prices. An occasional carload order for foundry coke is being filled at \$6, Connellsville.

**Ore.**—Low phosphorus iron ore from Spain continues to come in on old contracts. A shipment of 4,535 tons, valued at \$43,350, reached this port a few days ago.

**Billets.**—More British inquiry is in the market. Exporters ask for c.i.f. quotations. Domestic demand shows a slight improvement. We quote 4 x 4 in. open-hearth rerolling billets at \$42.50 and forging billets at \$55, Philadelphia.

**Plates.**—A better inquiry and a fair number of small orders for prompt delivery have resulted from the announcement of reduced prices. Operations at Eastern mills are still greatly curtailed, however, production averaging below 50 per cent in this district. One or two mills are doing about 60 per cent. We quote sheared plates ¼ in. and heavier at 2.895c. per lb., Philadelphia.

**Bolts, Nuts and Rivets.**—A new schedule of prices has been announced by makers. See page 918.

**Shafting and Screw Stock.**—At a meeting of makers of cold-rolled steel in Pittsburgh last week complaint was made that before the new prices became effective some mills were selling in less than carload lots at the carload discount. A result of the meeting was an agreement to maintain the customary differential between carload and less than carload business.

The Debevoise-Anderson Co., New York, seller of pig iron and coke, has opened a branch office at 709 Girard Building, Philadelphia.

**Structural Material.**—Although architects are known to be figuring on a considerable number of new buildings in the East, little indication of building activity has yet come to the direct attention of steel companies and fabricators. Consumers show a disposition to reinstate old orders where the reduced price is granted. We quote plain material at 2.695c., Philadelphia.

**Bars.**—A steel company reports that the greatest improvement in demand for any of its products has come on bars, both from consumers and jobbers. Bar iron makers also report a slightly better demand and a few small orders at the new bar iron price, which meets the steel bar quotation. Bar iron makers have dropped the designation "common merchant iron" and henceforth will quote two grades, namely "refined iron" at 2.35c., and "double refined iron," at 3.35c., base, Pittsburgh. These prices are subject to the extras adopted Oct. 17, 1918, except that on ¼ in. and 5/16 in. rounds and squares and flats 3/16 in. thick and thinner the full National Bar Manufacturers' Association extras apply, or, in other words, double the extras shown in the Oct. 17, 1918, list. We quote soft steel bars at 2.595c.; refined bar iron the same and double refined bar iron at 3.595c., Philadelphia.

**Sheets.**—A moderate improvement in demand for sheets has resulted from the announcement of the \$7 a ton reduction. We quote for delivery in the Philadelphia district: No. 10 blue annealed, 3.795c.; No. 28 black, 4.595c.; No. 28 galvanized, 5.945c.

**Strip Steel.**—Manufacturing consumers of strip steel have come into the market and in some cases have covered their requirements for second quarter. The reduction of \$10 a ton on hot-rolled is equivalent to the elimination of the extra for deep stamping and draw-

ing quality over the hoops and bands base. The new price is therefore 3.30c., Pittsburgh, on hot rolled.

**Wire Products.**—A decided improvement in orders and inquiries for wire and nails has resulted from the reduction of prices. Producers have revised prices on old orders to the new basis.

**Old Material.**—The scrap market shows increasing strength, this being induced not alone by better demand, but by the somewhat bullish attitude of brokers who have been making offers in excess of recently quoted prices. The trade expects that consumers must buy soon and the prices agreed upon for pig iron have had a marked influence in stiffening scrap prices. The opinion of dealers that there has been too wide a spread between pig iron and scrap prices is finding substantiation. An Eastern consumer has offered \$16, delivered, for No. 1 heavy melting steel, while from Pittsburgh have come offers of \$17 or higher. Dealers hold that \$16 is the minimum at which melting steel is obtainable for prompt delivery. For May delivery offers of \$17 have been heard. Other grades of scrap are also firmer, notably steel rails for rerolling, carwheels, No. 1 railroad wrought. No. 1 yard wrought and wrought iron and steel pipes and tubes. Short shoveling turnings and extra quality cast iron borings for blast furnace use can be sold at a premium of about \$2 a ton over mixed borings and turnings. We quote for delivery at consumers' works, Eastern Pennsylvania as follows:

No. 1 heavy melting steel.....	\$16.00 to \$17.00
Steel rails, rerolling .....	17.50 to 18.00
No. 1 low phosphorus, heavy, 0.04 and under .....	22.50 to 23.00
Iron rails .....	20.00 to 22.00
Carwheels .....	24.00 to 25.00
No. 1 railroad wrought.....	22.00 to 23.00
No. 1 yard wrought.....	20.00 to 21.00
Country yard wrought.....	12.00 to 15.00
No. 1 forge fire.....	12.00 to 13.00
Bundled skeleton .....	12.00 to 13.00
No. 1 busheling .....	15.00 to 16.00
No. 2 busheling .....	13.00 to 14.00
Turnings (short shoveling grade for blast furnace use) .....	11.50 to 12.00
Mixed borings and turnings (for blast furnace use) .....	9.50 to 10.50
Machine-shop turnings (for rolling mill use) .....	12.50 to 13.00
Cast borings (clean).....	13.50 to 14.00
No. 1 cast .....	22.00 to 23.00
Grate bars .....	18.00 to 19.00
Stove plate .....	18.00 to 19.00
Railroad malleable .....	18.00 to 19.00
Wrought iron and soft steel pipes and tubes (new specifications).....	17.50 to 18.00
Ungraded pipe .....	13.00 to 14.00

## Cleveland

CLEVELAND, April 1.

**Iron Ore.**—With the opening of the season of navigation near at hand no ore sales have been made for this season's delivery and no inquiries have come out since establishment of prices. Sellers are of the opinion that there will be little activity in the market this month. Many furnaces have large stocks and few will need any new ore before July. The Pittsburgh Steamship Co. will place some of its ore boats in commission April 14, but does not expect to get well under way before May 1. Managers of other large fleets have not set a sailing date, but some of the merchant ore firms do not expect to start shipments before May 1, as they are doubtful whether they will have a place for cargoes much before that date, and very light movement is expected early in the season. We quote, f.o.b. lower Lake ports, as follows:

Old range Bessemer, \$6.65; old range non-Bessemer, \$5.90; Mesaba Bessemer, \$6.40; Mesaba non-Bessemer, \$5.75.

**Pig Iron.**—The reduction in pig iron prices has resulted in some improvement in the demand for iron, the new inquiry being almost wholly for foundry grades. Four inquiries for 1000-ton lots came out during the week, two from the Cleveland territory, one from Indiana and one from the East. One inquiry was for iron for the last half, one for the remainder of the year and the others for earlier delivery. In addition, there have been quite a few inquiries for smaller lots for early shipment and several sales. Some of the inquiries are



regarded as market feelers. One inquiry for 3500 tons of Southern foundry iron for April-May shipment has come from a sanitary interest, and this will probably be placed within a day or two. A little better demand has sprung up for silvery iron in car lots. Cleveland furnaces are continuing their policy announced last week of using the Valley as basing point, thus getting \$3 a ton more for their iron than they would were they to quote the regular price, using Cleveland as the basis. A large number of foundries have written furnaces asking them to revise prices on existing contracts to the new basis, but Cleveland producers so far have not decided to make any revision of these contracts, and some announce positively that they will not do so. However, the fact that a Chicago interest has announced that it will reduce prices in its contracts to the present basis may eventually lead to the same action by some of the sellers in this territory. Producers in this territory claim that should a reduction in iron ore carrying charges be made, resulting in lower ore prices, the furnaces would be given the benefit of the cheaper ore. Information given out from Washington last week indicated that should any reduction be made in the price of ore, a corresponding reduction would be made in pig iron prices, but it has since been announced that Judge Gary was misquoted. We quote, delivered Cleveland, as follows:

Bessemer .....	\$29.35
Basic .....	27 15
Northern No. 2 foundry.....	28.15
Southern No. 2 foundry, silicon 2.25 to 2.75..	33.00
Gray forge .....	27.15
Open silvery .....	42.65
Standard low phos., Valley furnace.....	45.75

**Coke.**—Foundries are taking coke shipments on contract somewhat better than they have been. The market is very quiet, sales being limited to occasional carlet orders for prompt shipment. Best grades of Connelville foundry coke are quoted at \$5.75 per net ton at even. Cheaper grades can be had down to \$5.

**Bolts, Nuts and Rivets.**—Considerable nut and bolt business which was pending, but the orders for which were held up for price readjustments, has been placed on the books since the announcement of the new prices made at a meeting of the trade in Pittsburgh last Thursday. The cut in prices, amounting to approximately 20 per cent, is believed by manufacturers to be sufficient to attract buyers. However, little inquiry has come out since the prices were lowered and it is too early to determine the extent to which the demand will be stimulated by the lower prices. The \$10 a ton reduction in rivet prices has been followed by a good volume of orders on old contracts and considerable new inquiry. Manufacturers of bolts, nuts and rivets announce that the new prices will apply to all tonnage unshipped on the day the new prices went into effect.

**Finished Iron and Steel.**—Stimulated by the price reductions, there has been considerable improvement in the demand for finished steel, particularly for steel bars and structural material. The plate market so far has not responded to the lower prices, and plate orders are very light. Little new demand has developed for semi-finished steel, but since the price reduction the McKinney Steel Co., Cleveland, which recently shut down its steel plant, has received some specification on old contracts and resumed operations Monday in 6 of its 12 open-hearth furnaces. Fabricators are placing stock orders for structural material and some new building work has been placed, including 800 tons for the Wilson Foundry Co., Pontiac, Mich., taken by the McKellic Marshall Co.; 200 tons for a forge shop for the Willys Morrow Mfg. Co., Elmira, N. Y., taken by the Jones & Laughlin Steel Co., and 260 tons for a theater building placed by the Goodyear Tire & Rubber Co. with the Berger Iron Co., Akron. The placing of the contract for the Panna Building, Cleveland, requiring approximately 5000 tons of steel, has been deferred several months. A good volume of scattered orders and inquiry is coming from manufacturers in various lines and some new business is being placed by the implement manufacturers. Jobbers are checking up their stocks with a view of placing new orders, although some of the jobbers still have good-sized stocks and

considerable steel coming on old contracts. Hard steel bars and iron bars are quiet. Both are quoted at 2.35c., Pittsburgh. Prices on railroad spikes have been fixed at 3.35c., instead of 3.30c., as originally announced. Manufacturers of seamless steel tubing have reduced prices from 77 to 79 per cent discount. Inquiries for sheets have improved considerably, and orders are coming out slightly better than they did before the price reduction. Warehouse business is light. Jobbers' prices are as follows:

Steel bars, 3.27c.; plates, 3.57c.; structural shapes, 3.87c.; bands and hoops, 3.97c.; No. 10 blue annealed sheets, 4.47c.; No. 28 black sheets, 5.27c.; No. 28 galvanized sheets, 6.62c.

**Old Material.**—The scrap market is firmer and prices continue to show a moderate upward tendency. A western Pennsylvania consumer came in the market a few days ago for a round tonnage of borings and turnings, paying \$10.50 and possibly a little higher for the latter and around \$12 for borings. In the Cleveland market borings and turnings have advanced fully 50c. per ton and heavy melting steel 25c. Cast iron car wheels have advanced sharply, several hundred tons selling at \$22.50. Cast scrap is in fair demand and has advanced about \$1 a ton. Busheling is also \$1 per ton higher. Railroads in this territory have finally abolished the rule requiring shipping permits, which was placed in effect during the war. We quote, delivered consumers' yards in Cleveland and vicinity, as follows:

Heavy melting steel.....	\$15.00 to \$15.25
Steel rails, under 3 ft.....	19.00 to 20.00
Steel rails, rerolling .....	15.50 to 16.00
Iron rails .....	23.00 to 24.00
Iron car axles.....	29.50 to 30.00
Steel car axles.....	27.50 to 28.50
Low phosphorus melting scrap.....	16.25 to 17.00
Cast borings .....	9.50 to 10.00
Iron and steel turnings and drillings.....	8.00 to 8.50
Compressed steel .....	13.00 to 13.50
No. 1 railroad wrought.....	17.00 to 17.50
Cast iron car wheels .....	22.00 to 22.50
Agricultural malleable .....	14.00 to 15.00
Railroad malleable .....	17.00 to 17.50
Steel axle turnings.....	13.00 to 13.50
Light bundled sheet scrap.....	10.00 to 11.00
No. 1 cast.....	22.00 to 23.00
No. 1 busheling .....	14.50 to 15.00
Drop forge flashings, 10 in. and under.....	13.75 to 14.25
Drop forge flashings, over 10 in.....	10.50 to 10.75
Railroad grate bars .....	16.00 to 16.50
Stove plate .....	16.75 to 17.50

## British Iron and Steel Market

### High Prices Restricting Exports and Withdrawal of Government Subsidies April 30 a Check

(By Mail)

LONDON, England, March 17.—The whole situation in regard to iron and steel and other metals has recently been under a cloud, owing to the uncertainty of the coal situation. A commission has been inquiring into conditions in that trade, and as to the effect of further increases in wages. No definite result has been arrived at, but there has been rather a pessimistic feeling in regard to a possible strike.

In pig iron no particular improvement is in sight at the moment, but the tone is strong. The principal business is, of course, for the home market, but transactions would have been much more important were larger supplies of foundry iron available. Furnaces are still working poorly, so that the output of foundry iron is small in proportion to the production of lower qualities. The supply of East Coast hematite, however, is more than sufficient for home purposes, but for some reason permits to ship to foreign ports are only granted sparingly, probably with a view to conserving the stocks.

In finished steel, it is reported that bar makers are offered more business than they can undertake at £20 for marked bars and £17 15s. for second class bars net f.o.t., makers works. There is no improvement in the sheet market. There have been expectations of a revival of the demand for galvanized sheets from overseas markets but these are still disappointing. Black

corrugated doubles remain at £19 15s. The stringency which formerly characterized the steel market in general has almost disappeared and supplies of both semi and finished products appear, at least in some lines, to be readily obtainable. Although this branch of the industry has been unsettled since the signing of the armistice, first owing to labor unrest and secondly on account of the uncertain future of prices, and now by the reports of the coal mines commission meetings, there appears to be sufficient business on hand to keep works occupied for some time to come.

High prices are militating against expansion of the export trade. Meantime neither buyers nor sellers appear anxious to commit themselves beyond the end of April when it is expected that the government will withdraw all subsidies. Some further details are now announced in regard to the actual terms of the great engineering deal by which Vickers, Ltd., acquire the Metropolitan Carriage, Wagon & Finance Co. It appears that an increase of the Vickers capital will be involved, bringing it up to no less than £26,500,000. The two companies whose share as capital amounts to 16 and 14 millions sterling in market value, respectively, are already closely associated for they have large interests in common in the British Westinghouse Co. and other undertakings. If the scheme is accepted by the required 75 per cent, Vickers will thus carry out one of the biggest of their acquisitions. Apart from the works here, Messrs. Vickers have organizations in Canada, Italy, Spain, Russia and Japan.

The bald statement made on the authority of the Board of Trade that American steel was £5 per ton cheaper than British, and the request for an explanation from our makers, has made some small stir. The facts, of course, do not bear out the difference in price, while the extra cost of British material resolves itself largely into the old question of the subsidies.

A further amalgamation is rumored, this being the coming absorption of the Metropolitan Carriage Wagon & Finance Co. by Vickers, while it is stated that the Northumberland Shipbuilding Co. is acquiring William Doxford & Sons, Ltd., of Sunderland for £3,000,000. In connection with shipbuilding, according to advices from Italy, there are at present 46 ships of a total of 130,000 tons under construction in Italian shipyards, which does not appear to be considered a favorable state of affairs by that country.

It is reported that Mr. Scoby-Smith of Bolckow, Vaughan & Co. is endeavoring to form an association here among the producers of Cleveland hematite and basic iron with the intention of selling through one channel and at the same time creating a central office for the joint purchasing of ores. This created considerable interest among the merchant community who view the proposals with apprehension as they not unnaturally feel that such a combination would have the effect of crowding them out of the business.

### Coal Situation Better—Advancing Price Tendency—Pig Iron Output in 1918

(By Cable)

LONDON, ENGLAND, April 1.

The scarcity of pig iron is unrelieved, but the outlook as regards coal is a little more hopeful. All prices have an advancing tendency due to increasing costs. The control of high speed steel and its scrap has been abandoned and the official prices withdrawn. The tinplate market is dull.

The pig-iron output of the United Kingdom in 1918 is provisionally estimated at 9,039,429 gross tons, against 9,420,254 tons in 1917.

Government spot stocks awaiting disposal on March 15 were 80,000 tons of Swedish pig iron; 17,000 tons of shell steel billets, with the quantity in the United States to be shipped, if unsold under liquidation, at 70,000 tons, and that in Canada to be shipped at 168,000 tons; 5000 tons of bright steel and 10,000 tons of Swedish bar iron.

Following are the government fixed prices for steel

per gross ton except where otherwise stated, f.o.b. makers' works, the figures in brackets being the official domestic prices and the others the official export prices:

Hematite pig iron: East Coast, £8 12s. 6d. (\$39.52) [£6 2s. 6d.]; West Coast, £8 17s. 6d. (\$40.68) [£6 7s. 6d.].  
Ship, bridge and tank plates, £16 10s. (\$75.73) [£11].  
Boiler plates, £17 10s. (\$80.21) [£15].  
Ship, bridge and tank plates, thin, £19 10s. (\$89.37) [£16].  
Small angles, tees and flats, £20 (\$91.68) [£16 10s.].  
Beams, £16 2s. 6d. (\$73.92) [£13 12s. 6d.].  
Rails, 60 lb. per yd. and upward, £15 10s. (\$71.05) [£13 7s. 6d.].  
Rounds, squares and hexagons, £17 10s. (\$80.20) [£14 5s.].  
Billets and slabs for rolling, £13 10s. (\$61.88) [£12 5s.].  
Billets and slabs for forging, £15 (\$67.75) [£12 15s.].  
Bar iron, £20 (\$91.68).  
Tin plate, coke, 14 x 20, 112 sheets, 108 lb. f.o.b. Wales, 40s. to neutral countries; otherwise, 33s. 3d. (\$7.62) [33s. 10d.].  
Tin plate bars [£12 5s. 2d.].  
Galvanized sheets, £28 10s. (\$130.65), domestic price.  
Ferromanganese, £30 (\$137.52) [£25].

## New York

NEW YORK, April 1.

**Pig Iron.**—The lower price schedule resulting from the conference at Washington has not resulted in developing any business in the New York district. In fact, the market has even less activity than it had before the Washington conference. In spite of the action of a Chicago firm in granting the lower schedule on iron undelivered after March 21 on contracts, pig iron sellers in the East are not showing any disposition to take similar action and are hoping that it will not be necessary to do so. Some will undoubtedly blow out furnaces rather than make further concessions. In some cases in which eastern Pennsylvania furnaces have quoted on the Pittsburgh basis, they have lost the business. Buffalo seems to have taken all of the limited tonnage that has been placed. When the canal is in operation the Buffalo furnaces will be more active competitors as the canal rate will probably be \$3.15 from Buffalo to New York. Inquiries for export continue, but do not develop into business. Until competitive conditions develop more fully all prices must be regarded as nominal. We quote prices as follows, delivered New York, for Northern and Southern grades:

No. 1 foundry, silicon, 2.75 to 3.25.....	\$31.55
No. 2 X, silicon, 2.25 to 2.75.....	29.80
No. 2 plain, silicon, 1.75 to 2.25.....	28.55
No. 2 X, Virginia, silicon, 2.25 to 2.75.....	32.40
No. 1 Southern silicon, 2.75 to 3.25.....	37.45
No. 2 Southern, soft (all rail), sil., 2.25 to 2.75.....	35.70
No. 2 Southern (all rail), sil., 1.75 to 2.25.....	34.45

**Ferroalloys.**—Sales of ferromanganese continue to be confined to carload lots for immediate delivery, the market in general being extremely quiet. Producers are quoting 78 to 82 per cent alloy at \$150, delivered, with \$2 per unit deducted for each unit below 78 per cent, making the 70 per cent alloy obtainable at \$134, delivered. An interesting development is the offering by certain British producers of standard 80 per cent alloy at \$150, seaboard. It is understood that import restrictions are now removed on this commodity. Therefore the British alloy may be a competitor with the American. Imports of the British alloy in February were 2620 tons, and it is known that imports in March were very much larger, but all of this material is for delivery on old contracts made previous to the entry of the United States into the war. The spiegeleisen market is also inactive, with inquiries and sales confined to carload lots for early consumption. Alloy of 16 to 19 per cent is quoted at \$40, delivered, with the higher percentage material at \$45, delivered. It develops that about 100 tons of spiegeleisen has been sold for export as well as a small amount of ferromanganese. The market for 50 per cent ferrosilicon is very quiet. The alloy is obtainable for almost any delivery at \$90 per ton, delivered. Quotations for ferrotungsten are difficult to obtain in the absence of any real test of the market but it is believed that the alloy can be secured at around \$1.25 per lb. contained tungsten. Ferrochrome, 60 to 70 per cent, is quoted nominal at 32c. per lb. of contained chromium. Ferrochrome, carbon free, 60 per cent chromium, is obtainable at 70c. per lb. of alloy. Ferrovandium is quoted at 5.50 to

6c. per lb. of contained vanadium. Ferrocen-titanium, 15 to 18 per cent, is selling at \$200 per net ton in carload lots, at \$220 per ton in lots between one ton and a carload, and at \$250 per ton in lots less than a ton, f.o.b. Suspension Bridge, N. Y.

**Cast-Iron Pipe.**—Cast-iron pipe manufacturers in the East last Wednesday reduced prices \$5 per ton, quickly following the action of the shops in the Central West. The new schedule has not yet developed any business. New York quotations are as follows: 6-in. and heavier, \$57.70; 4-in., \$60.70; 3-in., \$67.70, and \$1 additional for class A and gas pipe.

**Finished Iron and Steel.**—The building trade is looking decidedly better judging from the increased amount of figuring being done on proposed construction. Actual buying has not generally shown any expansion following the naming of the new lower price levels, and in fact with some companies the conditions are decidedly dull so far as order-taking is concerned. Less is heard of a differential higher than domestic prices for export business, such as \$5 per ton, as was talked of; instead business has been booked at domestic prices, including as the most important item of the week 12,000 tons of rails for the Far East. A plate export order closed at 2.65c., Pittsburgh, was for 300 tons. In domestic lines the American Locomotive Co. has purchased 800 tons at the new price. The building for the Pictorial Review, West Thirty-ninth Street, New York, will, it is expected, be built by the Levering & Garrigues Co. The additional tank work for the Standard Oil Co. seems to have been deferred. New projects in the building line include a Keith theater, Bronx borough, 500 tons; an addition to the Knickerbocker Hospital, 131st Street, 500 tons; a building for the Public Service Corporation of New Jersey at Kearny, 700 tons, and a warehouse for the Post, Boston, 700 tons. Bar iron is now priced in two qualities, refined iron at 2.35c., Pittsburgh, the steel bar price, and double refined iron 1c. higher. Bolts and nuts have suffered the greatest cut known for years, amounting to 18½ to 22 per cent. We quote mill shipments as follows: Steel bars, 2.62c.; shapes, 2.72c.; plates, 2.92c.; refined iron bars, 2.62c.; double refined bar iron, 3.62c., all New York.

**Warehouse Business.**—So far no increment in business has resulted from the lower minimum price scale, beyond the slight hold-over of small current needs pending the arriving at the adjustment. Sizable business has not yet started. The \$5 a ton reduction has been put in effect generally, except as regards sheets. On a 1c. per lb. allowance for retailing, in place of the former 1.25c., current prices on No. 10 blue annealed sheets would figure at 4.82c. per lb. instead of 4.50c. now quoted; No. 28 box annealed black sheets at 5.62c. instead of 5.50c.; No. 28 galvanized sheets at 6.97c. instead of 6.50c. The 5.50c. quoted on No. 28 black sheet has been shaded by one dealer to 5.37c. Efforts are being made to iron out this unevenness, which is admittedly due to the desire of generally smaller interests to liquidate large stocks. Mill shipments are coming in fast, many on orders placed as far back as last November; but no material at the new low level is expected to come through for 4 to 6 weeks. One shipment has just arrived in the city on an order placed with the mill three years ago. Receipts of one dealer totaled 18 cars last week. Soft steel stocks especially are being greatly increased. Refined iron has been reduced \$16 a ton to 3.37c. a lb. The price on spring steel is softening, a little business having been taken at 6.50c.; but 7c. is temporarily held. The stock of Swedish iron in this country, practically in the hands of one local importer, is gradually being depleted, for the reason that the mills in Sweden are asking prices too high to warrant buying. Other out-of-store prices are: Steel bars, 3.37c.; structural shapes, 3.47c.; plates, 3.67c.; bands, 3/16 in., Nos. 10 and 12, 4.07c.; shafting, net list.

**Old Material.**—According to those who have been long in the business, the market has all the symptoms, evidenced in similar times past, when there is a flurry of inquiries but few actual sales, indicating the beginning of a general buying movement. Consumers are

ascertaining what they can buy scrap for to help them decide the most profitable mixture of pig iron and scrap to use in their plant. It is reported that one of the big interests started to feel out the market and after studying the situation decided not to buy at present. There is considerable activity in iron and steel pipe, borings and turnings, with some stir in heavy melting steel. Pronounced bullish tendencies indicate the optimistic feeling. Prices which brokers are quoting dealers, New York, follow:

Heavy melting steel.....	\$11.50 to \$12.00
Revolving rails .....	14.00 to 15.00
Relaying rails, nominal.....	38.00 to 40.00
Iron and steel car axles.....	19.00 to 21.00
No. 1 railroad wrought.....	18.50 to 19.50
Wrought iron track .....	13.00 to 14.00
Forge fire .....	8.00 to 9.00
No. 1 yard wrought, long.....	15.00 to 15.50
Light iron .....	5.00 to 5.50
Cast borings (clean).....	10.00 to 10.50
Machine shop turnings.....	8.50 to 9.00
Mixed borings and turnings.....	7.50 to 8.00
Iron and steel pipe (1 in. minimum diameter), not under 2 ft. long....	14.00 to 15.00
Stove plate .....	16.50 to 17.50
Locomotive grate bars.....	14.00 to 15.00
Malleable cast (railroad).....	13.50 to 14.50
Old carwheels .....	21.00 to 21.50
Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, are:	
No. 1 machinery cast.....	\$22.50 to \$23.50
No. 1 heavy cast (columns, building materials, etc.), cupola size.....	21.00 to 22.00
No. 1 heavy cast, not cupola size.....	15.00 to 16.00
No. 2 cast radiators, cast boilers, etc. ....	16.50 to 17.50

## Buffalo

BUFFALO, March 31.

**Pig Iron.**—While consumers in general show considerable interest in the market and there is a certain amount of inquiry coming in, the hoped for stimulus to buying as a result of the establishment of lower prices has not yet materialized to any very noticeable extent, and furnacemen now feel that a further period of assimilation and readjustment will be necessary before a normal amount of buying is resumed. Although a considerable aggregate tonnage has been inquired for, very little of it has as yet actually developed into orders. Furnace interests in Buffalo, without exception, are strong in their attitude that no revision in the prices for existing contracts will be made.

The selling consummated during the week was confined practically to carload lots, or small amounts to cover pressing needs; and inquiries which covered larger amounts appear to be simply to gage the condition of the market. Sellers are adhering strictly to the new price schedule, f.o.b. Buffalo, as follows:

No. 1 foundry, 2.75 to 3.25 silicon.....	\$29.75
No. 2 X, 2.25 to 2.75 silicon.....	28.00
No. 2 plain foundry, 1.75 to 2.25 silicon.....	26.75
Gray forge .....	25.75
Malleable, silicon not over 2.25.....	27.25
Basic .....	25.75
Basic, 1 to 1½ per cent mg.....	26.25
Basic, 1½ to 2½ per cent mg.....	26.75
Bessemer .....	27.95
Lake Superior charcoal, regular grades.....	38.50

**Finished Iron and Steel.**—After the first inflow of orders that had been held back awaiting announcement of the new prices, buying has again fallen off and there has been very little activity either in the way of inquiry or new orders during the week. General reports received from various parts of tributary territory indicate that stocks in many instances are low, while a few concerns, ship fabricators, etc., claim they have an unusual stock of plates and shapes. This is relative, however, for with normal business the present stocks would not be considered large. Architects' offices are getting a considerable number of inquiries, showing a revival of interest in building projects, but time will be required to get plans worked out to the building stage for the materials required.

**Old Material.**—The market is stronger all the way through, although no buying of moment has developed. Turnings and borings are showing fair demand and heavy melting steel is strong. Reports were current



to-day that the United States Steel Corporation has entered the market for a large tonnage of heavy melting steel and this has had a very stimulating effect on the price. An advance of 50c. per ton is noted to-day, with the expectation that it will go higher, as it is rumored that the corporation is paying higher than present prices for the tonnages it is said to be contracting for. Forecasts are being made by dealers that a buying movement will develop within a week or ten days. We quote dealers' asking prices as follows per gross ton f.o.b. Buffalo:

Heavy melting steel, regular grades.....	\$14.50 to \$15.50
Low phosphorus, 0.04 and under.....	20.00 to 21.00
No. 1 railroad wrought.....	18.00 to 19.00
No. 1 machinery cast.....	21.00 to 22.00
Iron axles.....	23.00 to 24.00
Steel axles.....	23.00 to 24.00
Carwheels.....	21.00 to 22.00
Railroad malleable.....	17.00 to 18.00
Machine shop turnings.....	8.50 to 9.50
Heavy axle turnings.....	13.00 to 14.00
Clean cast borings.....	11.00 to 12.00
Iron rails.....	21.00 to 22.00
Locomotive grate bars.....	16.00 to 17.00
Stove plate.....	17.00 to 18.00
Wrought pipe.....	13.00 to 14.00
No. 1 busheling.....	13.00 to 14.00
Bundled sheet stamping.....	11.00 to 12.00

## St. Louis

ST. LOUIS, April 1.

**Pig Iron.**—The announcement of new prices for pig iron is being digested in this market and while no large inquiries are coming out and no large transactions have been closed, there has been a considerable increase in inquiries which, however, have not so far eventuated in actual sales. The outlook is regarded as good by the furnace representatives and the calls received for figures on tonnages ranging from car lots up to 300 tons are expected to result in sales on these inquiries, but also to lead to other and larger inquiries as the stability of the market becomes manifest. A survey of the foundry field in this area seems to indicate the new prices will be accepted as stable for the remainder of the year and that the development of business will now depend chiefly on the ability of melters to make contracts for their products, to which end they are now beginning to bend definite endeavor based on the prices fixed. The general feeling is that another week or two will bring out more business and that it will grow in volume as each successive inquiry appears. One representative reported seven inquiries during the past week, the first actual inquiries since Jan. 1, and others reported very encouraging signs of a similar character.

**Coke.**—No new business appeared in coke during the week, but this business is expected to develop activity after the matter of pig iron is thoroughly settled. However, melters are pretty well supplied with coke and will scarcely need much beyond their stocks and future commitments already contracted for some weeks to come.

**Finished Iron and Steel.**—The new prices of finished products have stimulated interest and sales are beginning to give greater life to the market, although the tonnages being taken are not yet large. However, the aggregate sales during the week indicated a healthier tone and gave considerable encouragement to mill representatives that another short period would develop some really satisfactory orders. Movement out of warehouse is improving, following the announcement of the new prices and the orders placed show individual increase while the average of sales made is also larger. The disposition in this division of the market is to regard the future optimistically. For stock out of warehouse we quote as follows:

Soft steel bars, 3.44c.; iron bars, 3.44c.; structural material, 3.54c.; tank plates, 3.74c.; No. 8 blue annealed sheets, 4.59c.; No. 10 blue annealed sheets, 4.64c.; No. 28 black sheets, cold rolled, one pass, 5.44c.; No. 28 galvanized sheets, black sheet gage, 6.79c.

**Old Material.**—The scrap dealers, while optimistic as to the future results of the stabilizing of pig iron and finished iron and steel prices, are holding rather steady and are not doing any great amount of speculat-

ing against the future. They are, however, holding their stocks firmly and generally expect a strong and even an advancing market for their material when the adjustment of their prices to the pig iron prices is figured out. Large consumers in this section are pretty well stocked with scrap and are not now buying unless they see a bargain, but they are watching the market carefully.

Per Gross Ton	
Old iron rails.....	\$22.00 to \$23.00
Old steel rails, rerolling.....	16.00 to 17.00
Old steel rails, less than 3 ft.....	16.50 to 17.00
Relaying rails, standard sections, subject to inspection.....	40.00 to 41.00
Old carwheels.....	22.00 to 23.00
No. 1 railroad heavy melting steel.....	15.00 to 16.00
Heavy shoveling steel.....	14.00 to 15.00
Ordinary shoveling steel.....	13.00 to 14.00
Frogs, switches and guards, cut apart.....	15.00 to 16.00
Ordinary bundled sheets, scrap.....	9.00 to 9.50
Heavy axle and tire turnings.....	8.00 to 8.50

Per Net Ton	
Iron angle bars.....	\$16.00 to \$16.50
Steel angle bars.....	15.00 to 15.50
Iron car axles.....	24.00 to 24.50
Steel car axles.....	23.00 to 23.50
Wrought arch bars and transoms.....	19.00 to 19.50
No. 1 railroad wrought.....	15.00 to 15.50
No. 2 railroad wrought.....	14.00 to 14.50
Railroad springs.....	15.50 to 16.00
Steel couplers and knuckles.....	15.50 to 16.00
Locomotive tires, 42 in. and over, smooth inside.....	14.00 to 14.50
No. 1 dealers' forge.....	11.50 to 12.00
Cast iron borings.....	8.00 to 8.50
No. 1 busheling.....	13.50 to 14.00
No. 1 boilers cut to sheets and rings.....	8.00 to 8.50
No. 1 railroad cast.....	20.00 to 20.50
Stove plate and light cast.....	12.00 to 12.50
Railroad malleable.....	13.00 to 13.50
Agricultural malleable.....	11.00 to 11.50
Pipes and flues.....	11.00 to 11.50
Heavy railroad sheet and tank.....	10.00 to 10.50
Railroad grate bars.....	12.00 to 12.50
Machine shop turnings.....	6.50 to 7.00
Country mixed.....	11.00 to 11.50
Uncut railroad mixed.....	12.50 to 13.00
Horseshoes.....	14.50 to 15.00

## Cincinnati

CINCINNATI, April 1—(By Wire).

**Pig Iron.**—The question of revising contracts is not concerning selling agencies to any great extent. A contract is considered an agreement of a binding nature. However, there are contracts in which was inserted the proviso that the last Government price would rule. The question whether the last recommended prices are strictly Government figures or should be considered as being simply recommended has not yet been definitely settled in the minds of all, although it was voted upon at the Pittsburgh meeting last Wednesday. Inquiries are coming in at a rapid rate, but most of them are considered to be from melters who are seeking information. Nobody is buying for shipment beyond July 1. Stove makers are still using more scrap than formerly, and are not at all inclined to buy pig iron for last half shipment. The revision of prices has brought out no new business. On the other hand, it has caused many furnace operators to make plans for blowing out as soon as they are able to take care of contracts already in hand.

Based on freight rates of \$3.60 from Birmingham and \$1.80 from Ironton, we quote, f.o.b. Cincinnati:  
 Southern coke, silicon 1.75 to 2.25 (base price) \$30.35  
 Southern coke, silicon 2.25 to 2.75 (No. 2 soft) 31.60  
 Southern gray forge..... 29.35  
 Ohio silvery, 8 per cent silicon..... 42.05  
 Southern Ohio coke, silicon, 1.75 to 2.25 (No. 2)..... 28.55  
 Basic, Northern..... 27.55  
 Standard Southern carwheel..... 51.60

**Coke.**—The only items of interest given out today concern the reported curtailment in production of both furnace and foundry coke in the different districts. It is stated that Connellsville producers are considering only making sufficient fuel to fill contracts already in hand. The cost of coking coal is a matter of concern in the making and marketing of coke. No changes have been made in quotations in any district, with the

exception of some high sulphur furnace coke that can be had around \$3.75 per net ton at oven in the Connelville field. The foundries are not buying any coke ahead, although few of them are covered for their last-half requirements, which is somewhat extraordinary at this season of the year. New River oven operators are still holding at \$8 for foundry coke, and are only reducing about 50c. on furnace grades.

**Finished Material.**—Jobbers are now quoting the list price on cold-rolled shafting and report a fair amount of business coming in from machine-tool makers in this vicinity. The new prices adopted on both black and galvanized sheets have brought out some business, and, taken as a whole, specifications received by mills in this territory are considered satisfactory. Jobbers and sheet-metal contractors have very small stocks on hand. As most mills close down for two or three weeks in July, it is generally believed that buyers will begin to look ahead and place orders for future shipment to cover their requirements at least through the first half. The warehouses report a fairly good demand for small structural shapes and twisted concrete bars, and most of them are running short on stocks. Wire nails from wholesalers' stock have been fixed at \$3.85 per keg, base, and some business is being booked on this basis.

The following are present local jobbers' prices: Steel and iron bars, 3.33c. base; bands, 4.03c. base; structural shapes, 3.42c. base; plates, 1/4-in. and heavier, 3.63c. base; No. 10 blue annealed sheets, 4.53c., and wire nails, \$3.85 per keg base.

**Fluorspar.**—Little improvement is noted, and it is reported that shipments are being held up on old contracts. Washed gravel fluorspar from an approximate analysis of 85 per cent and over calcium chloride is unchanged around \$25 per ton at point of shipment.

**High-Speed Steel.**—Standard brands of high-speed steel are held at \$1.75 per lb. base, and manufacturers report business as showing some improvement.

**Old Material.**—A little more life is noted by different dealers, and prices are probably firmer on some grades of scrap. This does not apply to steel scrap of any kind, and one principal dealer quotes to-day re-rolling steel rails around \$13.25 to \$13.75 per gross ton. Steel rails for melting purposes can also be bought around \$12.50. No. 1 machinery cast is stationary at \$17 per net ton. Bundled sheet scrap has taken a drop, and is now quoted at \$8.50 to \$9 per gross ton.

Per Gross Ton	
Bundled sheet	\$9.00 to \$9.50
Mill iron rails	22.50 to 23.00
Delivering rails, 50 lb. and up	40.00 to 41.00
For-rolling steel rails	14.00 to 14.50
Heavy melting steel	12.00 to 12.50
Steel rails for melting	12.50 to 13.00
Cast carwheels	15.00 to 15.50
No. 1 railroad wrought	13.00 to 13.50

Per Net Ton	
Cast borings	\$5.00 to \$5.50
Steel turnings	5.00 to 5.50
Railroad cast	15.50 to 16.00
No. 1 machinery	17.00 to 17.50
Hard scrap	11.00 to 11.50
Iron axles	23.00 to 23.50
Locomotive tires (smooth inside)	14.00 to 14.50
Ropes and flues	10.50 to 11.00
Rollable cast	11.00 to 11.50
Railroad tank and sheet	9.00 to 9.50

### Dividends Reduced

**YOUNGSTOWN, OHIO, April 1**—Three major steel corporations here have cut dividends on common stock for the first quarter of 1919. The Youngstown Sheet & Tube Co. declared 3 per cent. The dividend for the previous quarter and the past two years was at the rate of 5 per cent, or 20 per cent yearly. From the office of President James A. Campbell the following statement was issued: "The dividend of 3 per cent is 2 per cent less than paid for the last quarter of 1918, as earnings have been reduced on account of lower prices prevailing for our products as well as reduced tonnage being shipped, owing to a falling off in business."

The Trumbull Steel Co., which last year paid 15 1/2 per cent on common, authorized 2 1/2 per cent for the first quarter of 1919, or at the annual rate of 10 per cent.

## IRON AND INDUSTRIAL STOCKS

### European Upheavals and Steel Price Adjustment Halt Gradual Upward Movement

Quotations declined early last week, partly as a reflection of the political disturbances in Europe and partly through some lack of certainty over the steel market. Recovery toward the end brought figures for steel company shares close to opening levels.

The range of prices in active iron and industrial stocks from Tuesday of last week to Wednesday of this week was as follows:

Allis-Chalm. com.	34 1/2 - 36 3/4	La Belle Iron c.	100
Allis-Chalm. pf.	91 - 92 1/2	Lackaw. Steel	68 3/4 - 70 1/4
Am. Can com.	48 3/8 - 52 1/2	Lake Supr. Corp.	19 1/2 - 20
Am. Can pf.	101 3/4 - 103 1/4	Midvale Steel	45 1/2 - 47 1/4
Am. Car & F. c.	89 3/4 - 90 3/8	Nat.-Acme	32 1/4 - 36
Am. Car & F. pf.	115	Nat. En. & St. c.	50 3/8 - 52 3/4
Am. Loco. com.	63 3/4 - 67	Nat. En. & St. pf.	100
Am. Loco. pf.	104 3/8 - 105	N. Y. Air Brake	106 1/2 - 109
Am. Radiator c.	285	Nova Scotia Steel	49 1/4
Am. Ship com.	108 - 110	Pressed Steel c.	68 - 70
Am. Steel Fdries.	79 1/2 - 82 3/4	Ry. Steel Spg. c.	77 1/8 - 78 3/4
Bald. Loco. com.	85 1/2 - 89 1/8	Ry. Steel Spg. pf.	107 1/2
Bald. Loco. pf.	104	Republic com.	80 3/8 - 83
Beth. Steel com.	65 1/8 - 69 1/4	Sloss com.	52 - 54
Beth. Stl. cl. B.	65 - 70 3/8	Superior Steel	36 3/4 - 40 3/4
Case (J. I.) pf.	94 - 95	Supr. Steel 1st pf.	97 3/4
Chic. Pneu. Tool.	64 - 65	Transue-Williams	40 1/2 - 45
Colo. Fuel	41 1/2 - 43 3/8	Un. Alloy Steel	42 1/2 - 44 1/2
Crucible Steel c.	64 3/4 - 67 1/2	U. S. Pipe com.	19 - 19 3/4
Crucible Steel pf.	93 1/2 - 94 1/8	U. S. Pipe pf.	55 - 55 1/2
Deere & Co. pf.	96	U. S. Steel com.	96 1/4 - 99 3/8
Gen. Electric	155 1/2 - 156 3/4	U. S. Steel pf.	114 3/4 - 115
Gt. No. Ore Cert.	40 1/2 - 41 1/4	Va. L. C. & Coke	54
Gulf States Steel	53 - 54 1/4	Warwick	8 3/4
Int. Har. com.	121 1/4 - 125 1/2	Westingh. Elec.	45 3/4 - 46 1/2
Int. Har. pf.	116 1/4		

### Dividends

The American Screw Co., quarterly, 1 3/4 per cent, payable March 31.

The American Seeding Machine Co., quarterly, 1 per cent on the common and 1 1/2 per cent on the preferred, payable April 15.

The American Shipbuilding Co., quarterly, 1 3/4 per cent and extra 2 1/4 per cent on the common, and 1 3/4 per cent on the preferred, payable May 1.

The Atlantic Steel Co., quarterly, 1 1/2 per cent on the common, payable April 1.

The Crocker-Wheeler Co., quarterly, 2 per cent on the common and 1 3/4 per cent on the preferred, payable April 15.

The Lukens Steel Co., quarterly, 1 per cent, payable April 15.

The Sharon Steel Hoop Co., quarterly, \$1, payable April 10.

The Superior Steel Corporation, quarterly, 1 1/2 per cent on the common, payable May 1, and 2 per cent on the first and second preferred, payable May 15.

The Transue & Williams Steel Forging Co., quarterly, \$1.25, payable April 15.

The Westinghouse Electric & Mfg. Co., quarterly, 87 1/2 c. on the common, payable April 30, and 87 1/2 c. on the preferred, payable April 15.

The Wheeling Mold & Foundry Co., quarterly, 1 per cent and extra 3 per cent on the common, payable May 1, and 2 per cent on the preferred, payable April 1.

The Youngstown Sheet & Tube Co., quarterly, 3 per cent on the common and 1 3/4 per cent on the preferred, payable April 1.

### Increased Mill Activity at Youngstown

**YOUNGSTOWN, Ohio, April 1**—(By Wire).—Reflecting the effect of stabilized prices, steel mill schedules in the district continue to show improvement. Almost without exception, operations were added to this week and the average percentage of schedules is placed from 75 to 80 per cent. Three companies, the Brier Hill Steel Co., the Trumbull Steel Co., and the Carnegie Steel Co., are approaching 100 per cent. The Republic Iron & Steel Co. and Sharon Steel Hoop Co. schedules are now more than 50 per cent of normal. The Youngstown Sheet & Tube Co., the largest employer in the Mahoning Valley, has suffered in the last two weeks the worst slump since the armistice was signed. Marked improvement is shown this week over last.

Eight blast furnaces in the Valley are either down or banked. The new 500-ton blast furnace of the Carnegie Steel Co. at Farrell, Pa., will be ready to start about May 10. It will replace No. 3 furnace, which was considered too small.

Signs of renewed activity are evident in the sheet steel and tin divisions. Inquiries have been coming in in larger volume.

# Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight rates from Pittsburgh on finished iron and steel products, including wrought iron and steel pipe, with revisions effective Nov. 1, 1918, in carloads, to points named, per 100 lb., are as follows: New York, 27c.; Philadelphia, 24.5c.; Boston, 30c.; Buffalo, 17c.; Cleveland, 17c.; Cincinnati, 23c.; Indianapolis, 25c.; Chicago, 27c.; St. Louis, 34c.; Kansas City, 59c.; St. Paul, 49½c.; Denver, 99c.; Omaha, 59c.; minimum carload, 36,000 lb. to four last named points; New Orleans, 38.5c.; Birmingham, 57.5c.; Pacific Coast, \$1.25; minimum carload, 80,000 lb. To the Pacific Coast the rate on steel bars and structural steel is \$1.315, minimum carload 40,000 lb.; and \$1.25, minimum carload 50,000 lb. On wrought iron and steel pipe the rate from Pittsburgh to Kansas City is 50c. per 100 lb., minimum carload 46,000 lb.; to Omaha, 50c., minimum carload 46,000 lb.; to St. Paul and Minneapolis, 49.5c., minimum carload 46,000 lb.; Denver, 99c., minimum carload 46,000 lb. A 3 per cent transportation tax applies. On iron and steel items not noted above, rates vary somewhat and are given in detail in the regular railroad tariffs.

## Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in. angles, 3 to 6 in. on one or both legs, ¼ in. thick and over, and zeos, structural sizes, 2.45c.

## Wire Products

Wire nails, \$3.25 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails taking an advance over this price of \$2. and shorter than 1 in., \$2.50. Bright basic wire, \$3.15 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$3.00; galvanized wire, \$3.60; galvanized barbed wire and fence staples, \$4.10; painted barbed wire, \$3.40; polished fence staples, \$3.40; cement-coated nails, \$2.85 base; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 60½ per cent off list for carload lots, 59½ per cent for 1000-rod lots, and 58½ per cent off for small lots, f.o.b. Pittsburgh.

## Bolts, Nuts and Rivets

Large structural and ship rivets.....\$3.70 base  
Large boiler rivets.....\$3.80  
7/16 in. x 6 in. smaller and shorter rivets..60 per cent off list  
Machine bolts h.p. nuts, ¾ in. x 4 in.:  
Smaller and shorter, rolled threads.....60-10-5 per cent off list  
Cut threads.....60-5 per cent off list  
Larger and longer sizes.....50-10 per cent off list  
Machine bolts, c.p.c. and t. nuts, ¾ in. x 4 in.:  
Smaller and shorter.....45-10-10 per cent off list  
Larger and longer.....40-10-5 per cent off list  
Carriage bolts, ¾ x 6 in.:  
Smaller and shorter, rolled threads..60-5 per cent off list  
Cut threads.....50-10-5 per cent off list  
Larger and longer sizes.....45-10 per cent off list  
Lag bolts.....65-5 per cent off list  
Plow bolts, Nos. 1, 2, 3.....60 per cent off list  
Hot pressed nuts, sq. blank.....3.25c. per lb. off list  
Hot pressed nuts, hex., blank.....3.25c. per lb. off list  
Hot pressed nuts, sq. tapped.....3c. per lb. off list  
Hot pressed nuts, hex., tapped.....3c. per lb. off list  
C.p.c. and t. sq. and hex. nuts, blank.....3.25c. per lb. off list  
C.p.c. and t. sq. and hex. nuts, tapped.....3c. per lb. off list  
Semi-finished hex. nuts:  
¾ in. and larger.....70-10 per cent off list  
9/16 in. and smaller.....80 per cent off list  
Stove bolts, in packages.....70-10-10-5 per cent off list  
Stove bolts.....2½ per cent extra for bulk  
Tire bolts.....60-10-10-5 per cent off list  
The above discounts are from March 21, 1919.  
All prices carry standard extras. No freight allowances.

## Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$52; chain rods, \$60; screw, rivet and bolt rods and other rods of that character, \$60. Prices on high carbon rods are irregular. They range from \$65 to \$75, depending on carbons.

## Railroad Spikes and Track Bolts

Railroad spikes 9/16 in. x 4¼ in. and heavier, per 100 lb., \$3.35, in lots of 200 kegs of 200 lb. each, or more; track bolts, \$4.35. Boat spikes, \$4.50 per 100 lb., f.o.b. Pittsburgh.

## Terne Plate

Prices of terne plate are as follows: 8-lb. coating, 200 lb., \$13.80 per package; 8-lb. coating, I. C., \$14.10; 12-lb. coating, I. C., \$15.80; 15-lb. coating, I. C., \$16.80; 20-lb. coating, I. C., \$18.05; 25-lb. coating, I. C., \$19.30; 30-lb. coating, I. C., \$20.30; 35-lb. coating, I. C., \$21.30; 40-lb. coating, I. C., \$22.30 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

## Iron and Steel Bars

Steel bars at 2.35 from mill. Prices on bar iron are 2.35c. for Eastern shipment and 2.55c. for Western shipment.

## Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing-card.

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
1/8, 1/4 and 3/8....	50½	24	1/8 and 1/4.....	29½	2½
1/2.....	54½	40	5/8.....	30½	3½
3/4 to 3.....	57½	44	1/2 to 1½.....	31½	16½
Lap Weld			Butt Weld		
2.....	50½	38	1¼.....	24½	9½
2½ to 6.....	53½	41	1½.....	31½	17½
7 to 12.....	50½	37	2.....	32½	18½
13 and 14.....	41	..	2½ to 6.....	31½	21½
15.....	38½	..	7 to 12.....	31½	18½
Butt Weld, extra strong, plain ends			Lap Weld, extra strong, plain ends		
1/8, 1/4 and 3/8....	46½	29	1¼, 1/4 and 3/8....	28½	11½
1/2.....	51½	39	1½.....	33½	20½
3/4 to 1½.....	55½	43	3/4 to 1½.....	39½	24½
2 to 3.....	56½	44	Lap Weld, extra strong, plain ends		
Lap Weld, extra strong, plain ends			1¼.....	25½	10½
2.....	48½	37	1½.....	31½	17½
2½ to 4.....	51½	40	2.....	33½	20½
4½ to 6.....	50½	39	2½ to 4.....	35½	23½
7 to 8.....	46½	33	4½ to 6.....	34½	22½
9 to 12.....	41½	28	7 to 8.....	26½	14½
			9 to 12.....	21½	9½

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers have been seven (7) points lower (higher price) than carload lots, and on butt and lap weld galvanized iron pipe have been nine (9) points lower (higher price).

## Boiler Tubes

The following are the prices for carload lots, f.o.b. Pittsburgh:

Lap Welded Steel	Charcoal Iron
3½ to 4½ in.....	40½
2½ to 3½ in.....	30½
2¼ in.....	24
1¾ to 2 in.....	19½
	3½ to 4½ in..... -16
	3 to 3½ in..... -1½
	2½ to 2¾ in..... +1
	2 to 2½ in..... +16
	1¾ to 1¾ in..... +2½

Standard Commercial Seamless—Cold Drawn or Hot Rolled

Per Net Ton	Per Net Ton
1 in.....\$327	1¾ in.....\$297
1¼ in.....267	2 to 2½ in.....177
1½ in.....257	2¾ to 3¾ in.....187
1¾ in.....207	4 in.....187
	4½ to 5 in.....207

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department, which will be subject to special negotiation.

## Sheets

Makers' price for mill shipments on sheets of United States standard gage in carload and larger lots are as follows:

Blue Annealed—Bessemer	Cents per lb.
No. 8 and heavier.....	3.50
Nos. 9 and 10 (base).....	3.55
Nos. 11 and 12.....	3.60
Nos. 13 and 14.....	3.65
Nos. 15 and 16.....	3.75

## Box Annealed, One Pass Cold Rolled—Bessemer

Nos. 17 to 21.....	4.15
Nos. 22 to 24.....	4.20
Nos. 25 and 26.....	4.25
No. 27.....	4.30
No. 28 (base).....	4.35
No. 29.....	4.45
No. 30.....	4.55

## Galvanized Black Sheet Gage—Bessemer

Nos. 10 and 11.....	4.70
Nos. 12 and 14.....	4.80
Nos. 15 and 16.....	4.95
Nos. 17 to 21.....	5.10
Nos. 22 to 24.....	5.25
Nos. 25 and 26.....	5.40
No. 27.....	5.55
No. 28 (base).....	5.70
No. 29.....	5.95
No. 30.....	6.20

## Tin-Mill Black Plate—Bessemer

Nos. 15 and 16.....	4.15
Nos. 17 to 21.....	4.20
Nos. 22 to 24.....	4.25
Nos. 25 to 27.....	4.30
No. 28 (base).....	4.35
No. 29.....	4.40
No. 30.....	4.40
Nos. 30½ and 31.....	4.45



## Metal Markets

### The Week's Prices

Cents Per Pound for Early Delivery							
Copper, New York		Lead		Spelter			
Lake	Electrolytic	Tin, New York	New York	St. Louis	New York	St. Louis	
Mar. 26	15.37½	15.12½	72.50	5.25	5.00	6.52½	6.17½
27	15.37½	15.12½	72.50	5.25	5.00	6.52½	6.17½
28	15.37½	15.12½	72.50	5.25	5.00	6.52½	6.17½
29	15.37½	15.12½	72.50	5.25	5.00	6.52½	6.17½
30	15.37½	15.12½	72.50	5.25	5.00	6.52½	6.17½
31	15.37½	15.12½	72.50	5.25	5.00	6.52½	6.17½
Apr. 1	15.37½	15.12½	72.50	5.25	5.00	6.52½	6.17½

NEW YORK, April 1.

The tone of all the markets is steady and firm, but activity is not pronounced except perhaps in copper, which is more active than in some time. The tin market continues lifeless and even more restricted. The lead market is quiet but firm. Demand for spelter is light but prices are steady. Antimony is unchanged.

#### New York

**Copper.**—More copper was sold in March than in any month since the armistice. One large producer asserts that his sales in that month were nearly normal. The transactions have been nearly, if not all, for April delivery, very few desiring to sell futures. Electrolytic copper has slowly advanced and is now quoted at 15.37½c., New York, with Lake copper largely nominal at 15.62½c., New York. The market is decidedly firm. Sales in March are estimated to have been about 75,000,000 lb., with about half of this sold in the last week. Two interesting events have taken place. The representatives of the Copper Export Association have returned from Europe. Their report is not startling but emphasizes the gradual depletion of stocks in the hands of the various Allied governments and the complete lack of copper in the Central Powers. A brisk demand from Europe is looked for ere long but at present it is small. An unconfirmed report is that the association's export price has been reduced from 23c. to 18c., New York. Trading on the New York Metal Exchange began auspiciously yesterday, March 31, many bona fide bids at fairly high levels, particularly for future delivery, being received, but no sales reported. To-day sales of 100 tons of electrolytic for April delivery were reported at 15.50c., New York, 25 tons for May at 15.50c. and 25 tons for June at 15.62½c. per lb.

**Copper Averages.**—The average prices of Lake copper in March, based on daily quotations in THE IRON AGE, was 15.64½c. per lb. The average price for electrolytic was 14.97½c.

**Tin.**—Stagnation continues to characterize the market, which is still under Government restrictions. These have been further emphasized in the request that domestic smelters of tin refrain from selling their product for the present. This has been acceded to so that American tin is hardly obtainable. This move is expected to expedite the absorption of the allocated metal which is still held at the fixed price of 72.50c., New York. Arrivals as far as reported in March were 1975 tons, all at Pacific ports. Spot Straits was quoted in London yesterday at £226 15s. per ton.

**Lead.**—There has been a little more demand with one or two fairly large inquiries reported as having been booked. Both the outside market and that of the leading interest are quoted the same, or 5.25c., New York, and 5c., St. Louis, for early delivery. The market is quiet but firm, most of the cheaper lots having been disposed of or withdrawn.

**Spelter.**—The market continues very quiet, but is a little firmer, with prime Western for early delivery held at 6.20c., St. Louis, or 6.55c., New York. There has been some inquiry from galvanizers, who have been almost the only buyers, the brass makers being practically uninterested. It is expected that an arrange-

ment, similar to the one for copper, will be made for the disposal of Government stocks of zinc, mostly high grade.

**Antimony.**—The market is dull and inactive, with quotations nominally unchanged at 6.25c. to 6.37½c., New York, duty paid, for Asiatic grades.

**Aluminum.**—The market is quiet with No. 1 virgin metal, 98 to 99 per cent pure, quoted at 28c. to 30c., New York, for early delivery.

**Old Metals.**—There has been a little more activity on the part of consumers due to the belief that the market has touched bottom, but the business has not been of sufficient volume to raise prices. Dealers' selling prices are nominally as follows:

	Cents per lb.
Copper, heavy and crucible	15.50
Copper, heavy and wire	14.50
Copper, light and bottoms	12.25
Brass, heavy	11.25
Brass, light	7.50
Heavy machine composition	15.00
No. 1 yellow rod brass turnings	8.25
No. 1 red brass or composition turnings	12.00
Lead, heavy	4.75
Lead, tea	4.00
Zinc	5.25

#### St. Louis

**ST. LOUIS, March 31.**—The non-ferrous markets have become nearly stabilized and there are increasing evidences of interest, with sales showing an increase. Lead in car lots is quoted at 5c. and spelter at 6.20c. In less than car lots the prices are: Lead, 5.25c.; spelter, 7c.; tin, 72.50c.; copper, 16c.; antimony, Asiatic, 8c. In the Joplin district there has been but little change in the situation, the buying being on a basis of immediate needs. Zinc ore, Joplin district, \$37.58 to \$40 per ton; calamine ore, \$26 to \$27 per ton; lead ore, \$60 to \$61 per ton. The output is not increasing. On miscellaneous scrap metals we quote dealers' buying prices as follows: Light brass, 6c.; heavy yellow brass, 8.50c.; heavy red brass, 12c.; heavy copper and copper wire, 12c.; light copper, 10c.; lead, 3c.; zinc, 4c.; tea lead, 3c.; pewter, 35c.; tinfoil, 40c.; aluminum, 18c.

#### Chicago

**CHICAGO, March 31.**—The chief feature in the Chicago metal situation is the continued tendency of copper to become firmer, although the quotation for metal out of warehouse stocks has not been actually advanced. All other metals are quiet and unchanged, with the exception of lead, which is up a few points. Some advances are shown in old material. We quote copper at 16c. to 16.50c. for carloads; tin, 72.50c.; lead, 5.25c.; spelter, 6.25c.; antimony, 8c. to 8.50c. On old metals we quote copper wire, crucible shapes, 13c.; copper clips, 12.50c.; copper bottoms, 11c.; red brass, 13c.; yellow brass, 8c.; lead pipe, 3.50c.; zinc, 4c.; pewter, No. 1, 32c., tinfoil, 37c., and block tin, 50c., all these being buying prices for less than carload lots.

#### Sells Rawhide Gear Department

J. Allan Smith, president New Process Gear Corporation, Syracuse, N. Y., announces the sale of the rawhide department to the Meacham Gear Co. of the same city. The organizers of the Meacham company were, until recently, officers in the New Process Gear Corporation, and its predecessor, the New Process Rawhide Co. With the purchase of the rawhide department the Meacham company obtains the special plant for preparing rawhide, all raw materials and machinery used in the rawhide department, as well as all processes for manufacturing rawhide. The New Process Gear Corporation will confine its work in the future to the manufacture of metal gears.

The Canadian output of nickel in 1918 is estimated to have been 92,076,034 lb., compared with 84,330,280 lb. in 1917.

Canada shipped in 1918 about 39,365 tons of magnesite, as compared with shipments of about 58,090 tons in 1917.

## PERSONAL

George Baker, who has been associated with the Illinois Steel Co. since its organization in 1889, and who for the past 20 years has held the position of general manager of sales in that company, has, at his request, retired from the active management of the sales department and hereafter will occupy an advisory position in that department.



GEORGE BAKER



EDWIN S. MILLS

Edwin S. Mills succeeds Mr. Baker as general manager of sales of the Illinois Steel Co. For a number of years, Mr. Mills was manager of sales of the Carnegie Steel Co. and the Illinois Steel Co. for the Cleveland district and also was manager of the Lake fleet which carried the ore for the Carnegie Steel Co. furnaces. During recent years, he has been a special representative of the Carnegie Steel Co. in Chicago. His long experience in the iron and steel trade qualifies him especially well for assuming the position of general manager of sales of the Illinois Steel Co.

Mr. Baker's long connection with the Illinois Steel Co. has given him a wide acquaintance in the iron and steel trade and his many friends will be glad to extend him congratulations upon the opportunity which now comes to him to lessen his business activities and responsibilities and to have more leisure for his own affairs.

Charles H. Grady has been appointed manager of the raw material department of the Illinois Steel Co., Chicago, to succeed C. F. Collins, resigned. Mr. Grady has been associated with Mr. Collins and was stationed at the South works.

L. J. Hinde, vice-president Toledo Machine & Tool Co., Toledo, Ohio, has sailed for Europe on a business trip.

E. E. Wood, Detroit, has been appointed sales manager of the Jones & Lamson Machine Co., Springfield, Vt. For eight years he has represented the company as salesman for the Detroit territory.

C. R. Bulley has been appointed sales metallurgist of the Hess Steel Corporation, Baltimore. When the United States entered the war he was placed in charge of the designing, building and operating of the heat-treating department of the Symington-Anderson Co., Rochester, which was manufacturing 75-mm. field guns for the United States Government. Prior to that time he had several years' experience in the metallurgical department of the Halcomb, Midvale and Carpenter Steel companies.

G. H. Parm of the Spartan Products Co., 120 Broadway, New York, exporter of iron and steel, will leave

this week on an extended visit to the company's Scandinavian office. Joseph A. Comstedt, president, expects to follow in May. Branch offices were recently opened in Buenos Aires to cover Argentine and Uruguay, and in Poland, Russia and Finland.

Fred E. Russell, formerly president and owner of the Aetna Foundry & Machine Co., Warren, Ohio, has opened an office in the Land Title Building, Philadelphia. Associated with him is Shields Burr, formerly chief engineer and works manager at the Aetna plant. The concern will be known as Russell & Burr, and they will act as contracting, industrial and sales engineers.

H. Lad. Landau, general sales manager Rownson, Drew & Clydesdale, Inc., and W. J. Crouch Co., Inc., 68 William Street, New York, exporters of iron and steel, will leave April 17 from Vancouver on the Empress of Japan for the Philippine Islands, China, Japan, India, the Straits Settlements, Dutch East Indies, Siam, Australia, New Zealand, and the Hawaiian Islands. He will establish a new branch house in India, and will remain abroad a year.

Louis G. Henes, San Francisco and Los Angeles, has been appointed representative of the Hendey Machine Co., Torrington, Conn., on the Pacific coast, thereby discontinuing the further use of the services of Pacific Tool & Supply Co., San Francisco and Los Angeles, as agent.

The Virginia Shipbuilding Corporation, Alexandria, Va., announces the resignation of Robert L. Lake, manager of purchases and traffic, effective April 30. Mr. Lake will return to his home in New York, where he will engage in a private enterprise, with heartiest wishes of the company for his success.

Morton D. Whitford, treasurer Semet-Solvay Co., and Charles H. Canfield, general auditor Onondaga Steel Co., have been added to the directorate of the Onondaga Steel Co., Inc., at Syracuse, N. Y.

C. E. Hague, formerly production engineer of the Mid-West Engine Co., Indianapolis, Ind., has been appointed sales manager of the American Steam Conveyor Corporation, Chicago, manufacturer of the steam ash conveyors and other ash-handling equipment. Mr. Hague assumed his duties March 17.

The Ohio Seamless Tube Co., Shelby, Ohio, announces several changes in its personnel: Judge Edwin Mansfield, chairman of the board; R. C. Skiles succeeds H. E. Brubaker as assistant general manager; G. L. Reichert succeeds J. A. Brubaker as secretary and treasurer; R. R. Johnston succeeds H. E. Brubaker as superintendent; S. D. Inscho, maintenance engineer; F. L. Benham, purchasing agent and chief of order department.

The American Manufacturers' Export Association has been informed of the appointment of George P. Toby, long connected with banking and industrial corporations in this country as executive secretary of the American Chamber of Commerce in London. Mr. Toby will sail for his new post about May 12. G. M. Cassatt, president American Chamber of Commerce in London, who is now in the United States, in announcing the appointment, explained that the London organization has as its members the representatives in England of American manufacturing and exporting interests, and also of the foremost British manufacturers and exporters to and importers from the United States.

E. Ellsworth McCormick has resigned as purchasing agent of the Standard Process Steel Corporation to accept a position with the Mesta Machine Co., Pittsburgh.

Frank M. Erb, Second National Bank Building, Pittsburgh, has been appointed representative in the Pittsburgh district for the sale of small and large open-hearth castings in western Pennsylvania, southern Ohio and West Virginia, made by the Strong Steel Foundry Co., Buffalo. In addition, Mr. Erb also represents in the Pittsburgh district the National Forge & Tool Co., Irvine, Pa.; Meadville Malleable Iron Co., Meadville, Pa.; Horsburgh Forge Co., Cleveland; A. Finkl & Sons, Chicago; and the Silver Mfg. Co., Salem,

Ohio. Mr. Erb represents the last named company only on castings and not on its other lines of machine tools and agricultural machinery.

T. F. Willoughby, formerly advertising manager of the J. I. Case Plow Works and the Wallis Tractor Co., Racine, Wis., has resigned to accept the position of advertising manager of the H. H. Robertson Co., formerly the Aspromet Co., First National Bank Building, Pittsburgh.

W. L. Romaine has resigned as secretary and manager of the machinery department of the Badger-Packard Machinery Co., Milwaukee, Wis. Mr. Romaine was with the company five years. He contemplates taking up direct representation of manufacturers of machine tools.

W. J. Austin, general manager of the Austin Co., industrial engineer and builder, Cleveland, has just returned after spending three months in France, Belgium and England. During the trip, opportunity was taken to inspect the 13 Austin buildings erected by the American forces under the company's supervision at St. Nazaire and Verneuil.

Leonard W. Williams of the pig iron firm of Park & Williams, Real Estate Trust Building, Philadelphia, and Waldo L. Phillips of F. R. Phillips & Sons Co., Pennsylvania Building, Philadelphia, iron and steel exporter, will sail for Europe, April 5, on the Aquitania. Mr. Williams will make a comprehensive study of the pig iron situation abroad. During the war, he was assistant to the Director of Steel Supply in Washington, working with Jay McLauchlan in the pig iron section. Mr. Williams and Mr. Phillips will visit all of the Western European countries, including Italy, where the F. R. Phillips & Sons Co. is opening an office at Milan, which will be under the direction of Lieut. Ernesto d'Amico upon his discharge from the Italian Military Mission in the United States. Mr. Phillips will remain abroad for an indefinite period, locating either in London or Antwerp as the company's Belgian business will be of first importance.

Reeves K. Johnson, son of Alva B. Johnson, president Baldwin Locomotive Works, Philadelphia, has been appointed foreign sales manager for the company, in connection with its recently established foreign sales department.

W. A. Early, formerly chief clerk in the Pittsburgh works of the Jones & Laughlin Steel Co., comprising the Southside, Soho and Keystone plants, also the Eliza and Soho blast furnaces, has been appointed auditor of the company, and J. A. Doyle, formerly at the Aliquippa, has been appointed auditor of works of the company. Both will make their headquarters, commencing April 1, in the general offices of the Jones & Laughlin Steel Co., Pittsburgh.

W. T. Mossman, publicity manager of the Jones & Laughlin Steel Co. of Pittsburgh, is in California recuperating his health after a recent severe illness.

F. A. Ogden, general freight agent of the Jones & Laughlin Steel Co., was toastmaster at the seventeenth annual dinner of the Traffic Club of Pittsburgh, held in the William Penn Hotel in that city on Wednesday, March 26. W. D. Hines, director general of railroads, was the guest of honor, and the leading speaker at the dinner.

Theodore Butler, who has been established in London since 1899 as representative in Europe of a number of important American manufacturers, expected to sail for the United States, March 31, on the Rotterdam. He is anxious to meet manufacturers of small tools and machine tools and will be at the Hotel Belmont, New York. Before going to Europe in 1899, Mr. Butler was in business at Akron, Ohio.

Edwin Fred D. Rice, U. S. N. R. F., has just returned from Brest, France, and has secured his release from active service. He is now representing the Hess Steel Corporation, Baltimore, in western New York and western Pennsylvania.

Alfred C. Howell has been appointed manager of

the structural steel division of the general sales department of Midvale Steel & Ordnance Co. and Cambria Steel Co., Philadelphia. A. W. Zahniser has been appointed manager of the schedule division, succeeding F. H. Lewis, who recently resigned.

Col. Thomas C. Clarke of the 110th Engineers, Thirty-fifth Division of the First Army, has arrived in New York from overseas. He was formerly manager of the Lehigh coke plant at South Bethlehem, Pa. Colonel Clarke received the Croix de Guerre for bravery in action in France.

Joseph T. Ryerson & Son, Chicago, have announced the appointment of A. M. Mueller to the position of general manager of sales, warehouse and mill products,



AUSTIN M. MUELLER

for all territory Pittsburgh and west. Mr. Mueller's association with Joseph T. Ryerson & Son dates from 1899. During this period, his travels have taken him through every state in the Union, as far north into Canada as railroad transportation will permit, and into southern Mexico. For three years he was the Ryerson Texas representative and also acted as manager of the New York and Minneapolis offices. In 1911 he was appointed assistant manager of sales, but soon left for St. Louis to open the Ryerson-Hagar plant. After three successful years as manager of that plant, he was recalled to Chicago to handle the main plant sales.

E. W. Strong, formerly manager of publicity and of the research department of the American Vanadium Co., later manager of sales of the Le Moyne Steel Co., Pittsburgh, has resigned the latter position and effective from April 1, will be general manager of sales of the newly organized Erie Crucible Steel Co., Erie, Pa., manufacturer of high speed and crucible tool steels with headquarters at Erie. The plant of this new company is expected to be in operation on a production basis about April 15.

E. C. Robertson has resigned his connection with the Winchester Repeating Arms Co., New Haven, Conn., to become general superintendent of the Arvac Mfg. Co., Anderson, Ind.

G. W. Ettenger, for many years a resident of Antwerp, Belgium, has become associated with the iron and steel export business of F. R. Phillips & Sons Co., Pennsylvania Building, Philadelphia, having been placed in charge of the company's Belgium and South American trade. South American business has become exceedingly active, the company reports, particularly in railroad material for Brazil.

Maj. W. W. Ricker, secretary Guarantee Construction Co., New York, who has been abroad for months in active service with the engineering department of the U. S. Army, has returned to the United States.

Major J. Lincoln Tate, who has been assistant general manager of the Eddystone Rifle plant at Eddystone, Pa., and secretary of the Eddystone Munitions Co., and formerly auditor and treasurer of the United States Express Co., has acquired a large interest in the Defiance Machine Works, Defiance, Ohio, and on April 1 became general manager of that concern. C. H. Kettenring, former general manager, retains the controlling interest in the works, and will continue in an active capacity as vice-president and chairman of the board of directors. With the changes in this organization the announcement is made of the reorganization of the Trumbull Motor Truck & Wagon Co., Defiance, of



which Mr. Kettenring has become president. Other new officers of the Trumbull company include Charles Behringer, chairman of the board, and R. Carey May, secretary and treasurer. The former was once manager of the Trumbull Wagon Co., and the latter was sales manager of the Defiance Machine Works.

T. C. Voorhees has been appointed resident manager for Hickman, Williams & Co., pig iron merchants, Morris Building, Philadelphia. O. W. Mason, formerly resident manager, who recently returned from Y. M. C. A. service abroad, has been made Eastern manager.

The Carpenter Steel Co. announces the appointment of Charles A. Heil as district sales manager vice James W. Sederquist, resigned, with office and branch warehouse at 400 Lakeside Avenue, N. W., Cleveland.

S. C. Munoz, president Federal Export Corporation, New York, has returned after several weeks' absence in Europe.

Ralph P. Zint has resigned his connection as manager of the steel department of the Swiftsure Export Corporation, 120 Broadway, New York, effective May 1. He has been elected vice-president of the Concrete Specialties Corporation, 15 Broad Street, New York, which has a system with special devices for rapid concrete construction calculated also to minimize the labor factor. Following his connection some years ago in the sales departments of the Carnegie Steel Co. and of the Republic Iron & Steel Co., Mr. Zint, previous to his present identification with the steel trade, was a member of the staff of the Federal Export Corporation.

Charles B. McElhany, vice-president American Steel Export Co., is spending a few weeks at Jacksonville, Fla.

Alfred C. Howell, who has been in charge of the steel warehouse sales of the William Bingham Co., Cleveland, has been appointed manager of the structural division in the sales department of the Midvale Steel & Ordnance Co.

Henri Nourry, of the firm J. Horstmann, 83 rue St. Maur, Paris, prior to the war sales manager in Paris for Alfred H. Schuette, has arrived in this country for the purpose of arranging for the agency of American machine tools, small tools and steel, in which his company will specialize with a view to replacing former German business. He will be in this country about two months, and may be addressed care of the Ericsson Screw Machine Products Co., 607 Bergen Street, Brooklyn, N. Y.

James Lloyd has been named general superintendent of the Lowellville, Ohio, works of the Sharon Steel Hoop Co. to succeed J. E. Daily, who resigned because of ill health. Mr. Lloyd has been with the Sharon plant of the company. Will B. Parry, mill superintendent at Lowellville, has been appointed assistant general superintendent.

The George N. Baker Co., 2468 East Grand Boulevard, Detroit, has opened sales rooms in Cleveland, with offices at 701 American Trust Building, in charge of Major I. H. Case, recently returned from active service with the aerial service of the American Expeditionary Forces, where he was decorated by the American, French and Belgian governments. Previous to his enlistment Major Case was connected with the company at Detroit.

The Titusville Iron Co. of Titusville, Pa., is now owned by the Titusville Iron Works Co., a \$2,500,000 corporation to be chartered under the laws of Ohio, which will be headed by John T. Dillon, former president of the Titusville Forge Co., and at present president of the Delaney Forge Co., Buffalo.

David B. Galbally and other creditors of the Standard Oil Engine Co., Bridgeport, Conn., have applied to the Federal Court for a receiver for the company. The company is a Delaware corporation, capitalized at \$100,000; it is said to have assets of \$320,000, but is unable to meet matured liabilities of \$87,000.

## OBITUARY

F. A. W. KIECKHEFER, president National Enameling & Stamping Co., New York, died after a stroke of apoplexy at his home in New York, March 26. He was born in Milwaukee, Wis., Feb. 10, 1852, and was educated in the Lutheran parish schools of that city, and began business life as assistant bookkeeper with John Pritzlaff, a wholesale hardware merchant, with whom he remained for five years. In 1872 he opened a retail hardware business for himself. He sold out in 1880, and engaged in the manufacture of tinware. The business was incorporated in 1892 as the Kieckhefer Brothers Co., with Mr. Kieckhefer, the originator, as president and general manager. He purchased the interests of his brother and other partner in 1899. Later in the year, he consolidated with four other large concerns, under the style of the National Enameling & Stamping Co., with a capital of \$30,000,000, of which he was vice-president and one of the largest stockholders. In 1908 he became president of the company, which office he held up to the time of his death.

LEANDER A. BEVIN, former vice-president of the Rider-Ericsson Engine Co., New York, and honorary president of the Associated Veterans of the DeLamater Iron Works, died at Atlantic City, March 24, at the age of 74. It was the DeLamater works that built the turret, guns, boilers, and engines of the famous Monitor of Civil War fame, later constructing complete ships of the same type. Mr. Bevin was son-in-law of Cornelius H. DeLamater, principal owner of the firm by that name. John Ericsson was a member of the engineering staff of the DeLamater Works. He originated a practical propeller wheel and also hot air engines of the Rider and Ericsson types, the latter being built by the Rider-Ericsson Engine Co., of which Mr. Bevin was vice-president.

SAMUEL T. FULTON, vice-president Railway Steel Spring Co., 30 Church Street, New York, died at his home in New York March 28. He was born in Topeka, Kan., about 53 years ago and became messenger in the telegraph office of the Kansas Pacific Railway in that city July 1, 1879. In 1904 he became assistant to the president of the Chicago, Rock Island & Pacific Railroad, from which position he resigned in 1910 to become the Chicago representative of the Railway Steel Spring Co. Two years later he went to New York as general sales agent of the company.

DANIEL J. DRISCOLL, Reading, Pa., of the Delaware Seamless Tube Co., Auburn, Pa., and formerly principal owner of the Diamond State Steel Co., Wilmington, Del., which was sold about four years ago to the Midvale Steel & Ordnance Co., Philadelphia, died March 28. He was 56 years of age, and had been associated with the iron and steel business all of his adult life, having started as an employee of what is now the American Iron & Steel Mfg. Co., Lebanon, Pa., 35 years ago.

SAMUEL B. DUSENBERRE, western sales manager New Departure Mfg. Co., died at his home in Detroit, March 26, of pneumonia. For the last eight years Mr. Dusenberre had been in charge of the western territory of the company and was formerly general manager of the Westinghouse Storage Battery Co., and purchasing agent of the Westinghouse Machine Co., Pittsburgh. He was a member of the Society of Automotive Engineers.

THOMAS R. MURRAY, general foreman of the Edgar Thomson blast furnaces of the Carnegie Steel Co., Bessemer, Pa., died at his home in Bessemer terrace, March 23. He had been connected with the Carnegie Steel Co. in various capacities for 28 years, and was a member of the Edgar Thomson Veterans' Association of the Carnegie Steel Co.

WILLIAM A. KENNY, aged 60 years, superintendent Reed & Prentice Co.'s foundry at Worcester, Mass., died March 23. A native of New Hampshire, he became a resident of Fitchburg, Mass., coming to Worcester in 1902 as foreman of the Reed & Prentice Co.'s foundry and becoming superintendent.

# Machinery Markets and News of the Works

## DEMAND FAIRLY ACTIVE

### Some Buying Deferred Because of Prices

#### Export Outlook Improving Despite Handicaps —Submarine Boat Corporation Inquires for 300 Small Tools

A fairly active demand for machine tools is described as the condition existing in most of the markets, but unquestionably considerable business is being held back because of the belief of prospective buyers that prices are too high. It is understood that this is the view taken by the purchasing department of the Chicago, Burlington & Quincy Railroad, which issued a list of about 50 tools at Chicago, purchases of which will probably be deferred. Difference of opinion exists in the trade on the question of price reductions. While a number of manufacturers have lowered their prices, others declare that such action is not justified until they work up the high-cost material now on hand. Some tool builders, moreover, have no disposition to reduce wages if it can be avoided. A section of the trade believes that action can be more intelligently taken after the annual meeting of the National Machine Tool Builders' Association at Atlantic City, N. J., on May 12 and 13, when more data as to production costs will be available.

Exporters of machine tools have brought the price situation to the attention of the manufacturers, particularly since rates of exchange have become unfavorable to the importers in the principal European countries. High ocean freight rates also are affecting the export situation detrimentally.

A very promising export business is developing in Spain and Portugal. The American Machinery Syndicate, 37 West Thirty-ninth Street, New York, which specializes in machinery for those countries, has a number of fairly large inquiries for machine tools, rolling mills and other equipment for expansion of the steel industry in Spain and for shipyards. F. C. Roberts & Co., Real Estate Trust Building, Philadelphia, are getting quotations on a list of heavy machine tools and steel-making equipment for the Sota & Aznar plant at Sagunta, Spain. A Cleveland builder of turret lathes has taken an order for shipment of 18 machines to Belgium and has received an inquiry for 50 tools from Denmark. Tool builders are dubious, however, as to export prospects in Denmark owing to the large

amount of machinery built in that country during the war. The British market is difficult for turret lathes and some other tools apparently due to the second-hand tools placed on the market there.

As an indication of the general situation in domestic machine-tool business, a leading New York machinery house covering a large section of the East, including New England, reports that its March orders compare very favorably with normal pre-war months. Business is spotty, however, some lines being much more in demand than others. One of the inquiries before the New York trade is from the Submarine Boat Corporation, New York, calling for 100 16-in. engine lathes, 100 20-in. upright drills and 100 emery grinders, all motor driven, for machine shops on merchant ships. The Standard Oil Co. of New Jersey has issued a list of about 50 machines for a ship repair plant at Bayway, N. J. In other territories there is a fair demand for small lots of tools. William Wharton, Jr. & Co., Easton, Pa., have bought a list of tools in Philadelphia for the manufacture of steel bottles for gas and oxygen. The Mitchell Motor Car Co., Racine, Wis., has ordered several turret lathes, and other automobile manufacturers continue to buy in small lots, particularly in the Detroit district, where strenuous efforts are being made to catch up on automobile production.

The War Department, as announced more fully elsewhere in this issue, has adopted a plan for the disposal of surplus machine tools, new and used, following conferences with representatives of the National Machine Tool Builders' Association and the National Supply and Machinery Dealers' Association. The country will be divided into a number of sales districts and a leading dealer will be appointed in each district as the Government's exclusive agent. He will be allotted all the tools in his district to sell, but will also have lists of all tools owned by the Government and will have the right to sell them, subject to prior sale by the dealer in whose district they happen to be. Manufacturers, it is reported, have agreed to take back tools of their own manufacture and market them on a 7½ per cent commission, one Government tool to be sold for each one from a manufacturer's or dealer's stock. The tools will be offered at values to be fixed by appraisal, and price reductions will not be permitted except by agreement with Washington. The inventory of Government tools has not been completed, so it is not certain how soon the new plan will become operative.

## New York

NEW YORK, April 1.

Conditions have somewhat improved in the past week in the New York machine-tool market. Business continues to be somewhat spotty, however, some tool builders getting a much better volume of orders out of this territory than others. A fair indication of general conditions is the statement of a large machinery house handling a representative line that its March business was more than expected and in dollars and cents ahead of the average pre-war records. Some machine-tool builders are complaining, however, of insufficient business, but it is pointed out that their expectations have probably been pitched on too high a scale owing to the tremendous business they did during the past three years.

One of the inquiries before the trade is from the Submarine Boat Corporation, 11 Pine Street, New York, for 100 16-in. engine lathes, 100 20-in. upright drills and 100 emery grinders, these tools to be used for the equipment of machine shops of merchant ships. The tools will be motor driven, and the inquiry also includes motors and controllers.

Another good-sized inquiry has come from the Standard Oil Co. of New Jersey for nearly 50 machines for its plant at Bayway, N. J. These machines are said to be for the repair of Standard Oil Co. ships. The list includes a multiple drill, cutting-off machine, bolt-pointing machine, two traverse shapers, universal grinder, 16 engine lathes, two milling machines, slotter, two boring mills, sensitive drill, disk grinder, drill grinder, horizontal boring mill, radial drill, face grinder, turret lathe and about 12 punches and shears, a plate

planer, etc. A list of equipment which was issued by the Standard Oil Co. of New Jersey several weeks ago, for shipment to Rumanian oil fields, has not yet been purchased.

Quotations on a list of machine tools and other machinery are being received by F. C. Roberts & Co., Real Estate Trust Building, Philadelphia, for the Sota & Aznar steel plant in Spain.

The leading manufacturer of heavy tools is understood to have a considerable amount of business on its books, including an order for about \$3,500,000 worth of gun tools which was placed by the Navy Department about three months ago for the new armor plate and gun plant at Charleston, W. Va.

Considerable domestic machine-tool business is reported to be held back because of expectations of price reductions and further offerings of tools from war plants. The entire equipment of the Wright-Martin Aircraft Corporation's plant at Long Island City, N. Y., is expected to be placed on the market soon. The International Arms & Fuze Co., Bloomfield, N. J., is reported to have disposed of a large number of the tools it recently offered for sale. A New Jersey shell factory's entire equipment is said to have been sold for shipment to Argentina, there to be used for shell manufacture.

The French High Commission, New York, has practically completed its purchases of a large list of tools. It came into the market last week for a few second-hand horizontal boring mills.

Orders for cranes are few and far between, but a little business is being done. The American International Steel Corporation, New York, has bought a 45-ton crane for shipment to Russia. James Shewan & Sons, Brooklyn, have bought from the Champion Engineering Co. a 20-ton crane for their ship repair plant. The Boston Navy Yard will purchase six traveling cranes at an estimated cost of \$175,000. Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, up to April 14. Complete specifications have not yet been issued for the cranes to be purchased by the Navy Department for the naval ordnance plant at Charleston, W. Va. The Philadelphia Roll & Machine Co., Philadelphia, has bought a 20-ton crane from the Milwaukee Electric Crane & Mfg. Co.

No important railroad inquiries are yet reported in the East but there is hope in the machine-tool trade that present financing plans of the railroads will provide for betterments soon.

The tractor industry, which has been conspicuous as a fairly large buyer of machine tools this year, will manufacture 315,000 tractors in 1919, according to statistics collected from manufacturers by the Department of Agriculture, Washington. This is more than double last year's record output.

The Athelstan Co., New York, has been incorporated with a capital of \$20,000 by H. Langelier, R. Jacobson and M. J. Hamburger, 1414 Fifth Avenue, to manufacture containers.

Richard & Son, Inc., New York, has been incorporated with a capital of \$30,000 by C. C. Zeller, L. M. Hueller and E. F. Roehm, 29 Liberty Street, to manufacture watches and watch movements.

The Newark Jitney Body Mfg. Co., 406 South Seventh Street, Newark, has filed notice of organization to manufacture automobile bodies. Samuel Loshirn, 376 South Sixth Street, and Samuel Zigman, 17 Lillie Street, head the company.

The Central Foundry Co., 90 West Street, New York, has leased the one-story building to be erected by the New York Central Railroad on Webster Avenue, near Claremont Parkway, at a cost of about \$75,000. Plans for the structure have been filed.

A new company to manufacture tin cans and other metal products has been organized by Vincent C. Pepe, 40 South Washington Square, New York, and associates. A plant will be established and plans for it are being prepared by Ferdinand Savignano, 18 East Forty-first Street, architect. The structure will be about 25 x 80 ft., and 23 x 70 ft., and is estimated to cost \$12,000.

The Jeweler's Saw Mfg. Co., Brooklyn, has been incorporated, with a capital of \$5,000, by J. J. Kebart, H. M. Isenfield and A. Ress, 350 Knickerbocker Avenue.

The American Nailing Machine Corporation, Brooklyn, has been incorporated, with a capital of \$22,000, by H. L. Holbrook, M. I. and A. S. Fisk, 364 St. Johns Place.

The Peerless Superheater Co., New York, has been incorporated, with a capital of \$100,000, by J. G. Pheil, H. W. Butler, 247 Fifth Avenue, and W. A. Dibble, Jr., 340 Forty-sixth Street, Brooklyn, to manufacture superheaters, etc.

The Friedrich Hafekost Tool & Instrument Co., Brooklyn, has been incorporated, with a capital of \$6,000, by Friedrich

Hafekost, P. J. Bach and M. F. Schreiber, 2429 Myrtle Avenue, to manufacture tools, instruments, etc.

The Delaware & Hudson Co., 32 Nassau Street, New York, is planning the rebuilding of its car repair shops at Carbondale, Pa., recently destroyed by fire, with loss estimated in excess of \$75,000.

The Todd Shipyards Corporation, 15 Whitehall Street, New York, has filed plans for a one-story addition to its works, Brooklyn, to cost about \$20,000.

The Foundation Co., 233 Broadway, New York, has closed down its shipbuilding yards at Portland, Ore., and Tacoma, Wash., heretofore devoted to the production of wooden vessels for the Government. The shipyard of the company at Kearny, N. J., is being devoted to finishing up work which is expected to be completed at an early date. The abandonment of work at these different yards has been caused by the decision of the Government to eliminate the construction of new wooden vessels and refusal to permit the remodeling of the properties for steel ship construction, owing to the present number of plants devoted to this work. The company is now operating a yard at Vancouver, B. C. The proposed plans for the construction of a shipbuilding plant in France for the building of a number of vessels for the French Government are being held in abeyance for the present; this plant, as contemplated, will be equipped for the production of steel vessels.

The Schofield Oil Co., 71 Broadway, New York, is acquiring equipment for its plant on Avenue R, Newark, N. J., including drill press, pipe machinery, and other apparatus. It recently filed plans for a two-story cooper shop addition, 89 x 100 ft., estimated to cost \$54,000.

Steinway & Sons, 109 East Fourteenth Street, New York, have had plans prepared for a one-story addition to their piano factory No. 2 Ditmars Avenue, Long Island City, estimated to cost \$75,000.

The Charles S. Monson Co., New York, has been incorporated, with a capital of \$25,000, by Charles S. Monson, Detroit; Edward Campbell, Elizabeth, N. J.; and Bradford Darrasch, 533 Canal Street, New York, to manufacture machinery, parts, and link connections.

W. Berman & Co., Inc., New York, has been incorporated, with a capital of \$25,000, by W. and M. Berman, 435 Grand Street; and A. Grossman, 945 East 181st Street, to manufacture iron and metal utensils for bakers.

The Lucey Mfg. Corporation, 233 Broadway, New York, manufacturer of pumps, engines, oil drilling machinery, etc., has increased its capital from \$2,000,000 to \$5,000,000. It operates factories at Chattanooga, Tenn., and Houston, Texas.

The American Gas & Electric Co., 30 Church Street, New York, will build an addition to its electric power plant at Windsor, W. Va., to cost about \$1,000,000. The extension will be about 200 x 300 ft., and will be equipped with three steam-operated generating units of about 180,000 kw. total capacity.

The Cameron Iron & Bronze Works, New Brunswick, N. J., has been incorporated, with a capital of \$30,000, by William D. Danbury, M. A. Harkness and H. C. Barnwell to manufacture iron and bronze castings, etc.

The T. A. Gillespie Co., 30 Church Street, New York, has disposed of its property and shell-loading plant at Runyon, near Perth Amboy, N. J., held in the name of the Runyon Corporation, to a recently organized company known as the Mutual Realty & Investment Co., Perth Amboy. The plant includes about 185 acres of ground, with 31 buildings, embracing machine shops, tool shops, carpenter and wood-working plant, power plant, and general shell-loading works, and with machinery and equipment represents an investment of close to \$800,000. The new owner is arranging to utilize the property for manufacturing operations.

The Richardson Scale Co., Athenia, N. J., has increased its capital to \$375,000. Henry Richardson is president.

The Hyatt Roller Bearing Co., Harrison, N. J., is planning for two one-story additions, 25 x 170 ft., and 25 x 140 ft.

Allan A. Ryan, 111 Broadway, New York, president of the Stutz Motor Co., and of the Royal Typewriter Co., has acquired the property of the Heyden Chemical Works, Garfield, N. J., at the sale held by the Allen Property Custodian, March 27. The consideration was about \$1,500,000.

The aluminum plant at Jefferson, near Morristown, N. J., operated by Charles Butters, Oakland, Cal., has been acquired by the Butters Aluminum Bronze Works, which will



operate. It is understood that increased operating facilities will be provided.

The property of the Goetze Gasket & Packing Co., New Brunswick, N. J., has been acquired by Peter F. Daly at the sale held by the Alien Property Custodian, for a consideration of \$70,000.

The Klingstag Auto Radiator Works, Elizabeth, N. J., has been incorporated, with a capital of \$25,000, by George Werner, Joseph Strauss, and Barney Nowich.

The Nixon Nitration Co., Millville, N. J., has resumed operations at its plant under regular operating schedule.

A. Gorlin, 613A Garfield Avenue, Jersey City, N. J., has had plans prepared for a one-story brick and concrete automobile repair shop, 100 x 127 ft., at Communipaw and Bergen avenues, to cost about \$35,000.

The Standard Bitulithic Co., 31 Clinton Street, Newark, N. J., has purchased from the New Jersey Zinc Co. land about 290 x 800 ft., near the foot of Chapel Street, fronting on the Passaic River. The site will be used by the new owner for a road equipment plant, to consist of one-story forge shop, main operating works, and other structures, to cost about \$10,000.

The L. S. Brach Supply Co., 129 Sussex Avenue, Newark, N. J., manufacturer of railroad signals, has changed its name to the L. S. Brach Mfg. Co.

The Motor Spark Plug Co., 93-107 Lafayette Street, Newark, N. J., has filed notice of organization to manufacture spark plugs, etc. Frederick Wackenhuth, 311 Hillside Avenue, heads the company.

The Hudson Auto Metal Works, Newark, N. J., has been incorporated, with a capital of \$100,000, by Ascher and Herman Maurer, and Simon Muller, to manufacture automobile parts.

The Brown-Hunkele Corporation, 12 Mechanic Street, Newark, N. J., manufacturer of electric motors, has increased its capital from \$30,000 to \$100,000.

The Broome Auto Radiator Works, Broome Street, Newark, N. J., has organized to manufacture automobile radiators, etc. Louis Abramowitz, 222 Springfield Avenue, heads the company.

The Colonial Stamping Co., Inc., Newark, N. J., has been incorporated, with a capital of \$50,000, by Robert Badenhop, 224 Delavan Avenue, and Abraham J. Schultz, 279 High Street, to manufacture stamped metal products.

William Van Keuren, Jersey City, N. J., has filed plans for a one-story brick machine shop at 229-31 Golden Street, to cost \$10,000.

The Expert Auto Radiator Co., 331 Montgomery Street, Jersey City, N. J., has filed notice of organization to manufacture radiators, etc. William Kass, 184 Mercer Street, heads the company.

#### Catalogs Wanted

S. de Harrenechea, 25 Beaver Street, New York, will be pleased to receive catalogs of plate bending machines, plate bending and straightening rolls, and shearing and punching machines for plates, rounds and angle iron, for a safe factory in Spain.

## Buffalo

BUFFALO, March 31.

Articles of incorporation have been filed by the Steel Vebur Screen Corporation, Buffalo, to manufacture moving-picture screens. The capital stock is \$100,000, and the incorporators are James Shea, F. W. McKinney and L. F. Gilbert, White Building, Buffalo.

The J. W. Pohlmann Foundry Co., Buffalo, is building a brick and steel foundry addition at Baitz Avenue and the Erie Railroad.

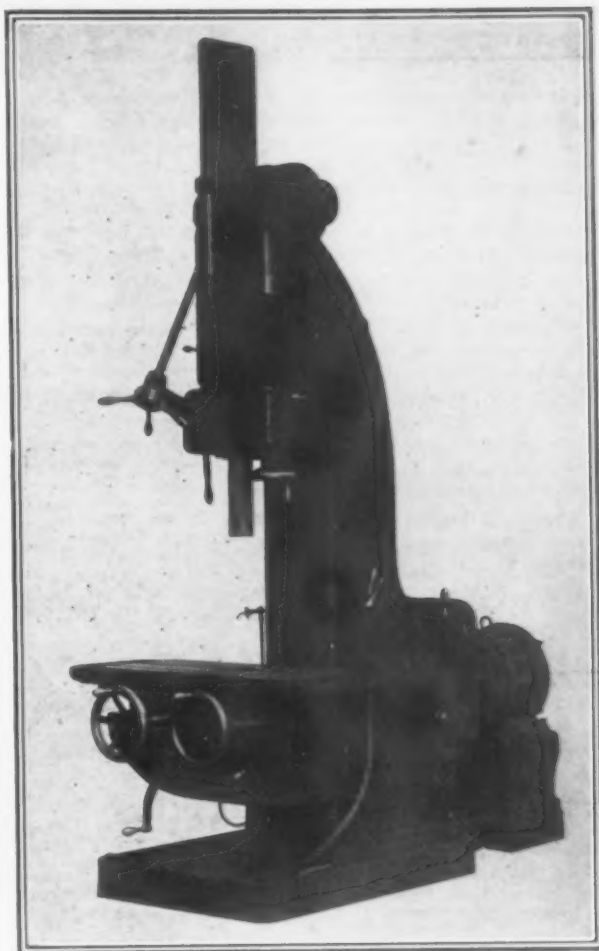
The Sanitary Ice Cream Machine Co., Buffalo, has been incorporated by D. Curr, C. A. and F. M. Frost.

Plans have been completed by the Defiance Paper Co., Niagara Falls, N. Y., for a new pulp mill estimated to cost \$100,000.

The American Malleable Co., Lancaster, N. Y., has petitioned the village board for permission to close up the north end of Warner Street to within 540 ft. of Erie Street, for the purpose of making an addition to its plant, as it now owns the land on both sides of Banner Street.

The W. H. Morrow Co., Elmira, N. Y., is having plans drawn for a forging building at its plant on South Main Street. Edwin Morrow is secretary.

The Wright Line Engine Co., 213 South Geddes Street, Syracuse, N. Y., is now operating its plant on a pre-war basis for the production of ingot molds, gray iron castings, etc. During the war it produced about 12,000 tons



The Defiance Machine Works, Defiance, Ohio, announces that they are now manufacturing a heavy service drill with compound table. The new feature is the compound table, as the remainder of the frame and mechanisms have been built over the specifications of the company's 24 in. heavy service drill. The table has a working surface of 17½ x 35 in., an adjustment of 18 in. longitudinally and a crosswise adjustment of 9 in. It has three tee slots running lengthwise, and a liberal oil groove.

of gray-iron castings for the Government, and under normal operations will develop a capacity of about 9000 tons a year. Both large and small castings are produced for steel mills, etc., with maximum up to about 20,000 lb. weight.

The Automatic Butter Server Co., Rochester, N. Y., has been incorporated, with a capital of \$100,000, by L. S. Appleby, P. A. Clumb, and E. W. Knowlton.

The Richardson Boat Co., North Tonawanda, N. Y., will construct a number of 64-ft. tugs for the War Department.

The Progressive Structural Steel Co., Builders' Exchange, Buffalo, is considering plans for rebuilding the portion of its works on Bailey Avenue, recently destroyed by fire, with a loss of about \$20,000.

The E. J. Wiggins Electrical Corporation, Buffalo, has been incorporated, with a capital of \$75,000, by E. J. Wiggins, C. G. Babcock and R. Siemer, to manufacture electrical products.

The Thompson Heater Corporation, Iroquois Building, Buffalo, has increased its capital from \$150,000 to \$175,000.

The Liquid Fuel Apparatus Corporation, Buffalo, has been incorporated, with a capital of \$25,000, by E. A. Pfall, W. M. Hoffman, and M. A. Willett, to manufacture fuel-handling equipment.

In connection with bond issues for a number of city improvements, the City Council, Buffalo, is arranging for a fund of \$136,000 for the installation of new pumping machinery and improvement work at the municipal pumping plants.

A one-story automobile repair works, 25 x 62 ft., will be constructed by Charles A. Koen, 1387 Niagara Street, Buffalo, as an addition to the auto works at this location. It is estimated to cost \$7,000.

The Chapin & Baker Mfg. Co., Syracuse, N. Y., has been incorporated, with a capital of \$25,000, by F. E. Baker, C. H. Searl, and E. I. Chapin, to manufacture engines, boilers, etc.

## New England

BOSTON, March 31.

A frame addition to a factory, about \$2,500, will soon be started at the plant of Gilbert H. West, Pembroke, Mass.

The foundation is being prepared for a three-bay steel building for the Clark-Allen Machine Co., Lee, Mass.

The Peck, Stow & Wilcox Co., Southington, Conn., will erect a six-story factory building, 55 x 112 ft., with an extension, 22 x 43 ft.

A factory addition, 150 x 200 ft., is in progress of erection for the D. E. Whiton Machine Co., New London, Conn.

Contractors have been figuring on a foundry building, brick construction, one and two stories, 58 x 150 ft., for the Berlin Foundry & Machine Co., Berlin, N. H.

Work has begun on the rebuilding of the veneer mill, \$35,000, three stories, 50 x 90 ft., for the Richford Mfg. Co., Richford, Vt.

Plans are being drawn for a small manufacturing building for E. Krout, Worcester, Mass., involving the expenditure of some \$8,000.

A two-story brick building, 60 x 83 ft., mill construction, \$18,000, is to be erected for the J. C. Doran & Sons Co., Providence, R. I., for lease to the Automatic Gold Chain Co., same city.

The Frank Wood Mfg. Co., Valley Falls, R. I., expects to have plans ready for figuring early in April on an addition, \$10,000, one-story, 80 x 80 ft.

The Marlin-Rockwell Corporation, New Haven, Conn., plans the erection of a brick foundry, one-story, 100 x 180 ft.

The State Motor & Tractor Co., Providence, R. I., has been incorporated with a capital of \$25,000 by Ira Marcus, A. O. Joslin and Daniel J. Healey, to manufacture tractors, parts, etc.

The Derby Brass Foundry Co., Derby, Conn., has been formed by George W. Castle, Charles and Joseph O'Connor to manufacture castings, machinery and tools.

The Air Reduction Co., 120 Broadway, New York, is planning for the construction of a new acetylene works on the Columbia Road, Dorchester, Mass., to cost about \$100,000.

The Doughty & Welch Electric Co., Inc., Fall River, Mass., has been incorporated with a capital of \$50,000 by W. H. Doughty, William T. Welch and M. D. Riley, to manufacture electrical products.

T. Quayle & Co., Inc., Providence, R. I., has been incorporated with a capital of \$100,000 by John T. Quayle and Edward G. Carr, Providence, and Jean P. Howes, Newark, N. J., to manufacture jewelry.

The Rhode Island Humidifier & Ventilating Co., Boston, has been incorporated with a capital of \$50,000 by John C. and W. E. Pendleton and George D'Arcy to manufacture ventilating and other equipment.

The City Council, Westerly, R. I., has applied to the State Legislature for permission to increase the appropriation of \$100,000 previously granted for a municipal electric power plant to \$300,000, for enlarged plant and facilities.

Walter B. Lasher, president American Chain Co., Bridgeport, Conn., has acquired the property of the International Textile Co., Connecticut Avenue, Bridgeport, at the sale held by A. Mitchell Palmer, Alien Property Custodian, for a consideration of \$1,518,000.

The Haskell Electric Co., Holyoke, Mass., has been incorporated with a capital of \$30,000 by Frank E. Haskell, F. Haskell and R. L. Davenport, to manufacture electrical products.

The Bridgeport Belting Co., Bridgeport, Conn., has been incorporated with a capital of \$50,000 by Frederick J. Webster, Andrew M. Glanville and Natale Rldolf, to manufacture belting.

The Racicot-Richard Cutlery Co., Webster, Mass., recently organized, has arranged for the establishment of a plant at 30 Myrtle Avenue, formerly used by Racicot Brothers. It will be equipped for the manufacture of machine knives and cutters for other industrial work. The initial plant will cost about \$10,000. Arthur Racicot heads the company.

The Liberty Jewelry Mfg. Co., 33 Eddy Street, Providence, R. I., has filed notice of organization to manufacture jewelry specialties. Thomas Pignatelli, 12 Paul Street, heads the company.

The Standard Lighting & Heating Co., Springfield, Mass., has been incorporated with a capital of \$50,000 by Arthur

G. Taylor, Ralph H. Benson and R. L. Myer to manufacture heating and lighting specialties.

The Bancroft Razor Corporation, Worcester, Mass., has been incorporated with a capital of \$30,000 by interests formerly connected with the company of the same name, operating at 5 Cypress Street, and sold last October to the Griffin Cutlery Works, New York. The company will manufacture cutlery and razors. Max Schwartz, John H. Meagher and Arthur L. Silberstein, the latter of New York, are the incorporators.

Baxter D. Whitney & Son, Winchendon, Mass., wood-working machinery manufacturers since 1837, have been incorporated as Baxter D. Whitney & Son, Inc., under the laws of Massachusetts, with a capital stock of \$1,250,000. As William M. Whitney, son of the late Baxter D. Whitney, is president of the corporation; Marcus L. Foster, treasurer, and Frank C. Smith, Jr., clerk, the business will be continued under the same management. In addition to wood-working machinery, the Whitney company is making the cylinder grinding machine formerly made by the Brown & Sharpe Mfg. Co., Providence, R. I.

Bids have been received for building the machine shop and drykiln additions to the plant of Pratt Read & Co., Deep River, Conn. Construction will be brick and reinforced concrete. The machine shop will be two stories, 64x70 ft., and the drykiln, one story, 22x40 ft.

Landers, Frary & Clark, New Britain, Conn., will erect a four-story, 60x100 ft. factory at Plainville, Conn., and expects to occupy it July 1.

The New Britain Tool & Mfg. Co., New Britain, Conn., has been incorporated and has elected the following officers: C. Adrian Carlson, president; Rudolph Sandberg, vice-president; Charles G. Hammar, treasurer; Harold Johnson, secretary.

Earl H. Knowlton and Bernard McKenna have organized the Woodland Machine Co., Worcester, Mass.

The Woonsocket Wagon Mfg. Co., Woonsocket, R. I., has just completed a plant for the manufacture of commercial drop forgings.

A one-story, 28x34 ft., \$7,500 factory addition is now in course of erection at the plant of Pratt & Cady, Hartford, Conn.

The Walsh Steam Boiler Works, Holyoke, Mass., will erect a two-story brick machine shop and storage building to cost about \$7,000.

The \$40,000 fertilizer plant now under construction at North Truro, Mass., for the East Harbor Fertilizer Co., Springfield, Mass., will have boiler and engine houses. Foundation of these is already in place.

A factory addition, brick and steel, six stories, 72x112 ft., \$65,000, is under a general contract to be erected for the Bradley Smith Co., New Haven, Conn.

The Athol Mfg. Co., Athol, Mass., has begun the erection of a factory building, 30x120 ft., and one 40x60 ft.

The Merriam Mfg. Co., Durham, Conn., will use electric power in the \$4,000 structure now in course of construction.

The Standard Envelope Sealer Co., Everett, Mass., has let the general contract for building a two-story factory, 65x120 ft.

The city of Holyoke, Mass., contemplates the erection of a \$250,000 junior high school to have the necessary apparatus for manual training and vocational work.

Plans are ready for figuring on the \$72,000 addition to the spar shop at the Navy Yard at Portsmouth, N. H. No date has been assigned for close of bidding.

## Philadelphia

PHILADELPHIA, April 1.

Buying of machine tools in this market is in moderate volume. Inquiries have been fairly numerous, but buyers apparently are holding off in the expectation of lower prices. A small list of tools has been bought by William Wharton, Jr., & Co., Easton, Pa., for the machining of steel bottles for gas and oxygen. Three steam hammers and other forging equipment was also purchased. This concern is reported to be figuring on other new manufacturing work, and may be in the market soon for additional tool equipment.

The Emergency Fleet Corporation is still carrying on negotiations with a number of private companies for the construction of drydocks and ship repair plants, but no contracts have as yet been definitely closed. The number of such plants, originally fixed at 19, has been reduced. The Fleet corporation is undertaking the construction of five floating drydocks, which will later be offered for sale to private companies.

The Bethlehem Fabricators, Inc., Bethlehem, Pa., formerly the Guerber Engineering Co., has recently added new equipment, including cranes and assembly hoists. An order

was placed last week for four cranes, one 5-ton, two 10-ton, and one 20-ton.

The United Gas Improvement Contracting Co., Philadelphia, has been organized as a subsidiary of the United Gas Improvement Co., to manufacture gas appliances, vertical radiators, boilers, and gas-plant equipment, as well as electric and other apparatus. Offices will be located in the United Gas Improvement Building. Paul Thompson, vice-president United Gas Improvement Co., is president.

The Florence Iron Works, Florence, N. J., has resumed operations following a shutdown for several weeks. Plans are to develop full-time production at an early date.

Fire, March 19, destroyed a portion of the plant of the Empire Tire & Rubber Co., Trenton, N. J., with loss estimated at \$20,000.

Emil D. Avas, Philadelphia, has arranged for the immediate erection of a one-story top addition to his foundry at 907 North Hancock Street, 20 x 30 ft.

A one-story automobile repair and service building, 97 x 160 ft., will be erected at Frankford and Columbia avenues, Philadelphia, by J. M. Kennedy, 1001 Chestnut Street, at an estimated cost of \$35,000.

The Thompson Iron Works, 1825 Callowhill Street, Philadelphia, specializing in the production of boilers, has filed plans for extensions and alterations.

The Lloyd Garrett Co., 229 North Twenty-third Street, Philadelphia, has awarded contract to Mitchell Brothers, 2125 Race Street, for a two-story addition to its foundry, 20 x 42 ft. to cost \$4,000.

Ira K. Davis, Church Lane and Woodstock Street, Philadelphia, is planning the erection of a two-story auto repair works, 75 x 115 ft., to cost about \$25,000.

The Carleton Coal Co., Scranton, Pa., is planning to rebuild its electrically-operated coal breaker at Minooka, recently destroyed by fire with loss of about \$50,000.

The New Jersey Zinc Co., Palmerton, Pa., has had plans prepared for a three-story brick addition, to cost about \$150,000.

The Parish Mfg. Co., Reading, Pa., manufacturer of automobile frames, has completed a contract covering 10,000 frames for automobile trucks of army type for the Four-Wheel Drive Automobile Co., Clintonville, Wis.

The Mauch Chunk & Lehigh Transit Co., Lehigh, Pa., is planning the purchase of power-plant machinery. Granville Rehrig is general manager.

A one-story boiler plant, 42 x 50 ft., for works operation, will be erected by George Garnet, Allentown, Pa., at Ninth and Greenleaf streets, in connection with his four-story textile plant, 37 x 164 ft.

The American Die & Tool Co., Second and Buttonwood streets, Reading, Pa., manufacturer of transmission equipment, dies, tools, etc., is planning the immediate erection of a one-story machine shop, 40 x 64 ft.

The Bethlehem Motors Corporation, Allentown, Pa., has inaugurated production work on regular commercial trucks, and plans to bring its plant to a pre-war basis of operation at an early date. The remaining Government contracts for class B motor trucks are being completed rapidly.

The Chamber of Commerce, Bethlehem, Pa., it is reported, is investigating the proposed erection of a branch plant of the Ford Motor Co., Detroit, in that section, with the purpose of securing the establishment for that city.

The Philadelphia & Reading Railroad has taken out a permit for the erection of a steel and concrete addition to its smith shop in Reading, Pa. The addition will be 28 x 46 ft. Henry M. Schroeder of Reading, Pa., is the contractor.

The Bauman Iron Works and Agricultural Iron Works, both of Reading, Pa., have filed notice of their merger, under the name of the former. John Bauman, Muhlenberg, Pa., is president, and Daniel J. Kramer, Pennside, secretary.

The Remmen Gas Engine Corporation, Pittsburgh, has been incorporated by David E. Mitchell, 1002 Columbus Bank Building, Pittsburgh, and others, with a capital stock of \$3,000 to manufacture motors.

The Model Products Co., Philadelphia, has been incorporated, with a capital stock of \$5,000, by George W. Hosfield and others, to manufacture hardware, signs, etc.

The Meteor Products, Inc., Philadelphia, has been incorporated, with a capital stock of \$100,000, to manufacture automobiles, trucks, tractors, and accessories. The incorporators are Edwin A. Schoen, 1520 Spruce Street; Frank L. Bader, and Albert M. Hoover, 1345 Spruce Street.

The Central Electric Tool Co., Pittsburgh, has been incorporated, with a capital stock of \$5,000, to manufacture

electrical appliances, machines and devices. John A. Metz, 2800 Espy Avenue, Dormont, Pa.; S. E. Wentley, West Elizabeth, Pa., and John H. Martin, Bridgeville, Pa., are the incorporators.

The Harrisburg Mfg. & Boiler Co., Harrisburg, Pa., is closed down temporarily in order that repairs may be made and to permit the conversion of the machinery for commercial manufacturing purposes. The manufacture of 36 gun carriages for the Government has just been finished, completing its war contract work.

## Pittsburgh

PITTSBURGH, March 31.

The Enterprise Machine Shop, Beaver Falls, Pa., maker of automobile parts, etc., is installing new machinery at its works for increased operations. C. A. Spickerman is general manager.

An automobile repair works will be operated by Joseph A. Bergman, Pittsburgh, of Bergman & Son, contractors, in the three-story structure on Dinwiddie Street, near Center Avenue, 44 x 136 ft., recently purchased for about \$40,000.

The Chesapeake & Ohio Railroad, Richmond, Va., is said to be planning for additions to its car and repair shops at Huntington, W. Va., at an estimated cost of over \$100,000.

The Keystone Mfg. Co., Elkins, W. Va., is planning a one-story plant, 100 x 125 ft., for the manufacture of tin-plate boxes and other specialties. The works are estimated to cost about \$40,000. W. H. Mason is president.

The Northern Virginia Power Co., Winchester, Va., will build a one-story addition to its power plant at Millville, W. Va., 50 x 57 ft., and 33 x 50 ft.

The car shops of the Virginia Railroad, Princeton, W. Va., were destroyed by fire recently, with loss estimated at \$50,000. Plans are being considered for rebuilding.

The Huntington Casket Mfg. Co., Huntington, W. Va., recently organized, with a capital of \$50,000, is planning a two-story plant at Logan, W. Va.

The National Shale Brick Co., Martinsburg, W. Va., recently incorporated, with a capital of \$250,000, is arranging for a new plant near Martinsburg to cost in excess of \$200,000. James N. Dyson, 301 North Second Street, Philadelphia, Pa., is one of the promoters.

The E. T. Lippert Saw Co., 19 Lincoln Avenue, Millvale, Pittsburgh, is building an addition to its works for increased output.

In connection with the new yards and car shops of the Pennsylvania Lines West, Pittsburgh, at Wellsville, Ohio, now in course of building, a power plant for general works operation will be constructed. The entire project is estimated to cost in excess of \$1,000,000.

The Princeton Motors Co., 1003 Mercer Street, Princeton, W. Va., has been organized, and will conduct a general machine and automobile repair business. Prices are wanted on new and second-hand machine tools. W. W. Hazelett, Jr., is secretary and manager.

## Baltimore

BALTIMORE, March 31.

A decided impetus has been given new construction work in this section during the month just ended. The records of the building department of the city show that the demand for permits has been greater than during the corresponding month before the war. Although the announcements of new industrial plants have been few, it is generally understood that some important projects in this particular will be made public in the near future.

The Washington, Baltimore & Annapolis Railway Co., Baltimore, will build a freight terminal depot and warehouse to cost \$40,000.

The Mineral State Coal Co., 1127 Munsey Building, Baltimore, wants prices on 250-kw. 250-volt generators.

The Town Commissioners, Centreville, Md., plan to install a 150-hp. boiler in the waterworks and electric plant.

The Union Iron Works, Norfolk, Va., is planning to install machine-shop equipment to cost about \$6,000. Its capital stock has been increased to \$25,000.

The General Electric Machinery Corporation, Norfolk, Va., has been incorporated with \$20,000 capital stock. William A. Burckard is president and E. T. Henderson secretary.

C. A. McLean, Citizens Bank Building, Norfolk, Va., wants dealers' prices on 100-hp. engines.

The Bear Poplar Garage Co., Bear Poplar, N. C., has been



organized and will build a repair shop. C. L. Beaver is manager.

The High Point Marble & Granite Works, High Point, N. C., wants prices on second-hand 2-ton traveling cranes.

The National Machine & Electric Co., High Point, N. C., wants prices on 36-in. x 36-in. x 8 or 10-ft. bed planers, No. 2 or 3 universal milling machines, and 42-in. boring mills.

The Siddall-Richardson Motor & Welding Co., Sumter, S. C., has been incorporated with \$5,000 capital stock by T. H. Siddall and R. J. Richardson.

F. Rickenbacker, St. George, S. C., will build a garage and repair shop.

The Virginia-Carolina Chemical Co., Richmond, Va., is said to be planning to build a fertilizer plant at Jacksonville, Fla.

A new one-story brick automobile repair works, 280 x 700 ft., will be constructed by Joseph M. Curran, 501 North Pulaski Street, Baltimore. Machinery for repair work will be installed.

The Bethlehem Steel Co., Sparrows Point, Md., will build a new one-story pumping plant at its works, about 50 x 75 ft., to cost about \$25,000 with equipment. The Bethlehem Shipbuilding Corporation, a subsidiary, has completed plans for a two-story rivet store department, 42 x 86 ft., estimated to cost \$30,000, including equipment.

Coffer & McLean, Norfolk, Va., have awarded a contract to the Nugent Price Construction Co., Mutual Building, for a one-story machine shop to cost \$7,000.

The Mutual Power & Light Co., Burlington, N. C., recently incorporated with a capital of \$125,000, is planning a central electric power plant for service to industrial works at Burlington and vicinity. J. N. Williamson, Jr., and L. B. Williamson head the company.

In connection with improvements to the city gas works, the City Council, Rocky Mount, N. C., is planning for the installation of a new 60-hp. boiler and auxiliary equipment.

The National Machine & Electric Co., High Point, N. C., is planning for the purchase of equipment for its proposed machine shop and foundry on East Russell Street, including machine-shop and wood-working tools. T. G. Shelton is secretary.

## Chicago

CHICAGO, March 31.

Railroad purchasing of machine tools does not look promising at this time for two reasons, of which one is quite sufficient—the railroads lack the money. The second is that at least some railroad purchasing agents believe prices are too high. It is understood that this view is taken by the Chicago, Burlington & Quincy, which issued a large list recently.

Considerable difference of opinion exists in the machine-tool trade over price reductions. While a number of manufacturers have lowered their prices, others insist such action is not justified until they work up the high-cost material now on hand. They point out that while pig iron has been reduced, castings are purchased months in advance of actual use to allow proper seasoning. Another point is that labor is as high as at any time in recent months and that they have no disposition to reduce wages if it can be prevented. Against all this is the fact that prices in several instances have been cut. The majority of the trade is of the opinion that prices should not be lowered for a time yet. It believes that action can be more intelligently taken after the spring meeting of the National Machine Tool Builders' Association, which is to be held at Atlantic City, May 12 and 13, when more data as to costs will be available.

Despite the unfavorable aspect of buying by the railroads, business in other directions is so good that sellers have very little of which to complain. Among active buyers are makers of automobile parts, phonographs and musical instruments, printing presses and power plants. The printing press business promises to be especially good, inasmuch as their manufacture was prohibited during the war. The Miehle Printing Press & Mfg. Co., Chicago, has about concluded the manufacture of gun mounts, and prior to running full on its regular line will need some additional tools. At least one other printing press manufacturer is still on naval gun mounts.

The Illinois Steel Co. has taken bids on a number of tools for its Gary shops.

The Wagner Electric Co., St. Louis, has purchased some turret lathes and is inquiring for other machines to be used in the manufacture of distributors for automobiles. The Schroeder Headlight Co., Evansville, Ind., maker of locomotive headlights, has also done some buying.

The adjustment of claims against the Government con-

tinues to proceed very slowly and in some directions is holding back business, inasmuch as former war contractors or sub-contractors cannot round out their plans until they receive money due them.

Building permits shows a substantial increase in Chicago, but they are general in character and new plant construction is not yet under way.

The week in point of aggregate sales has been as good if not better than the preceding one.

W. P. Whitney, architect, 38 South Dearborn Street, Chicago, is preparing plans for a railroad supply factory, comprising three units, 110 x 350 ft., including a crane runway, to be erected on the west side of the city, at a cost of \$80,000. The name of Mr. Whitney's client is not announced.

The Zorger Lens Co., Champaign, Ill., has been incorporated to manufacture lenses. W. H. Zorger is president.

The Pullman Couch Co., 3759 South Ashland Street, Chicago, is having plans prepared for the construction of a new four-story and basement addition, 125 x 400 ft., at Thirty-eighth and Ashland streets. It is estimated to cost, with equipment, \$250,000. Julius Kramer is president.

Fire, March 23, destroyed one of the buildings of the Western Electric Co., Chicago, manufacturer of electrical machinery and equipment, with loss estimated in excess of \$250,000. It was previously used as a munition works.

The Horizontal Freezer Co., Chicago, has been incorporated with a capital of \$10,000 by Martin J. Clark, Joseph A. Halderman and Guy J. Dart to manufacture refrigerating equipment.

The Hawkins Electric Co., 540 West Lake Street, Chicago, manufacturer of electrical goods, has filed plans for the erection of a new one-story plant, 40 x 125 ft., on Washington Boulevard, to cost about \$10,000.

The McIntosh Battery & Optical Co., 217 North Desplaines Street, Chicago, has acquired about 120 x 126 ft. on California Avenue as a site for a new works. It will defer erection until a later date.

The Gates Rubber Co., South Broadway, Denver, Col., manufacturer of automobile tires and other rubber goods, is planning for the erection of a new four-story manufacturing plant, 93 x 120 ft., to cost \$60,000.

The Russell Grader Mfg. Co., University Avenue, Minneapolis, Minn., is considering the erection of branch works for the manufacture of agricultural equipment in the vicinity of Memphis, Tenn.

## Detroit

DETROIT, March 31.

Leaders of the local automobile industry declare that the only obstacle in the path of extending their trade to a degree never before reached is the lack of manufacturing facilities. Orders accumulated during the war and it will be many years before the factories can catch up in production. Some manufacturers who have converted war purpose additions to the manufacture of automobiles, parts and accessories state that one of the problems now confronting them is their inability to obtain the desired types of machines, and it will be several months before they can resume production on the scale planned.

A shortage of labor continues in Detroit, and at the U. S. Employment Bureau it is said that common labor is refusing 50 and 60 cents per hr. Soldiers are finding no difficulty in obtaining work, especially those in skilled lines.

The Prudden Wheel Co., Lansing, Mich., is reported to be back on a 100 per cent peace time basis and has a production equal to that before the war. The company employs 1100 men and women and is taking back all returned soldiers.

The General Motors Corporation, will start expansion work at its several plants in Michigan, involving an expenditure of \$850,000 for buildings, as soon as a sufficient number of workingmen's houses have been provided.

The Mt. Clemens Foundry Co., Mt. Clemens, Mich., has started the erection of the main foundry building, 160 x 250 ft., and the building of two sidings to the railroad. The plant is controlled by the General Motors Corporation.

At the meeting of the stockholders of the Gillett Motor Products Co., held in Howard City, Mich., it was decided to increase the capital stock to \$150,000. The following directors were elected: Ralph Gillett, J. D. Stewart, Saginaw, Blaine Henkel, Harry F. Beckley and R. S. Jennings.

The Frost Gear & Forge Co., Jackson, Mich., is having plans prepared for an addition, 72 x 150 ft., two stories, of reinforced concrete and steel. A laboratory will be located in the basement. The building will be devoted to heat treatment of steel.

The Fay-Kultgen Foundry Co., St. Joseph, Mich., has

begin further plant expansion, which is the third enlargement within a short time.

The Hardie Mfg. Co., Hudson, Mich., manufacturer of gray pumps and paint, was partly destroyed by fire, with a property loss estimated at between \$70,000 and \$100,000.

The Nelson Motor Truck Co., Saginaw, Mich., is planning an expansion of its factory to care for increased production, including a deal with the John Simmons Co. of New York, involving nearly \$2,000,000. About 20 acres of land adjoining the factory have been purchased to provide a site for a plant with a capacity for 15,000 trucks annually.

Frank K. Vaughn and Fred Mueller, Hamilton, Ohio, were the low bidders for the contract to build the tractor plant of Henry Ford & Son in that city. It involves an expenditure of \$200,000 and is for a two-story building 100 x 600 ft., to be completed by June 1.

The New Way Motor Co., Lansing, Mich., has appointed Harry J. Sproat secretary and plant manager. It makes air-cooled gas engines and is preparing to erect extensions.

A portion of the Hess-Pontiac Spring & Axle Co.'s plant, Pontiac, Mich., a subsidiary of the Standard Auto Parts Co., was destroyed by fire March 24. The damage is estimated at \$150,000. It will be rebuilt at once.

## Milwaukee

MILWAUKEE, March 31.

New business booked by local machine tool manufacturers continues spotty, although the demand for milling machines is active and is undergoing gradual expansion. Business in general lacks volume. The definite determination of basic iron and steel prices, which was expected to have a beneficial influence on the machine-tool trade, does not yet appear to have had any effect. Tool builders are hopeful, however, that betterment will come, as some time must necessarily elapse before the reductions actually reach finished machinery values. The automotive industries still predominate as buyers of milling machines in this market. Orders consist mainly of single tools, with few requirements exceeding two or three machines at one time.

The H. W. Johns-Manville Co., Milwaukee and New York, has engaged Herman J. Esser, architect, 402 Camp Building, Milwaukee, to design its new plant at Waukegan, Ill., which will involve a total investment of more than \$3,000,000 and take the place of the present works at Forty-second and State streets, Milwaukee. The new plant will be similar in design and equipment to the New Jersey works and is expected to be ready for bids by April 10 or 15. It will be equipped for the manufacture of asbestos goods, automobile accessories, electrical supplies, etc. Charles R. Manville, 201 Clybourn Street, Milwaukee, is vice-president.

The National Enameling & Stamping Co., Milwaukee, will be ready for bids about April 10 for the erection of a four-story addition to its Milwaukee works on St. Paul Avenue, from Ninth to Twelfth streets. The building will be of reinforced concrete, steel and brick, 115 x 220 ft., and will cost about \$200,000. The project is in charge of Herman J. Esser, architect, 402 Camp Building. E. H. Schwartzburg is general manager.

The United States Tractor & Machinery Co., Menasha, Wis., is installing machinery and equipment in the John Storage Building, 100-110 Tayco Street, for the assembling of farm tractors, pending the construction of the first unit of its new plant, to be ready about June 1 or 15. The company is a reorganization of the United States Tractor Co., Chicago. G. D. Harris, designer and general manager, and H. C. Berry, chief engineer, of the Chicago company, occupy the same positions in the new Menasha corporation. The capital stock is \$250,000. Joseph G. Sailor, Menasha, is president.

The United States Switch Co., Eau Claire, Wis., is taking bids for the erection of additions which will increase the capacity of its iron and steel foundry 33 1/3 per cent and the capacity of the machine shops about 50 per cent. The foundry improvement involves the installation of some new equipment to provide for larger and heavier castings than heretofore made. The present plant is being operated at maximum capacity on orders for standard switch stands and automatic switch locks, railroad motor cars, rubber mill machinery, automobile tire cores and molds, farm tractor parts, etc. J. W. Hubbard is president and general manager.

The Cutler-Hammer Mfg. Co., Milwaukee, has awarded a contract to H. Schmitt & Son, 422 East North Avenue, for a one-story addition, 60 x 160 ft., at Twelfth Street and St. Paul Avenue.

The Northern Conveyor & Mfg. Co., Milwaukee, has filed an amendment to its articles of incorporation to increase the capital stock from \$50,000 to \$100,000.

The Water and Light Commission, Clintonville, Wis., is taking bids for a 220-gal. triplex plunger pump, direct-con-

nected to a 220-volt motor. Julius Spearbraker is secretary and city clerk.

The Badger State Tanning Co., Sheboygan, Wis., is taking bids for the erection of a new power plant and boiler house which, with other improvements, will cost about \$50,000. The architects are Juul & Smith, Sheboygan.

Leach & Christenson, Hartford, Wis., will build a two-story brick and concrete building, 60 x 80 ft., to be used for general machine work and automobile repairs.

The Hayssen Mfg. Co., Sheboygan, Wis., has awarded the general contract to Christ Ackermann Sons Co., local, for a new machine shop costing about \$35,000. The company manufactures special machinery.

The Bissell Lumber Co., Marshfield, Wis., will double the capacity of its saw and planing mills at Tripoli, Wis., at an estimated cost of \$40,000. The Rhinelander Iron Works, Rhinelander, Wis., has the contract for the additions.

The Common Council of Chippewa Falls, Wis., is contemplating the erection of a junior high and vocational training school to be erected this year at a cost of \$120,000 to \$200,000, including equipment. L. M. Newman is chairman.

The Northern Foundry Co., Marinette, Wis., manufacturing gray iron castings for the automotive industries, is increasing its force to accommodate new contracts received since the reduction in basic iron and steel prices. The company expects to be able to reach maximum capacity by June 1.

The North Freedom Canning Co., North Freedom, Wis., will build a new plant costing \$50,000, including a one-story boiler house, 38 x 40 ft., and a steam generating plant. George Shore is manager.

The Stewart Tractor Co., Milwaukee, has been incorporated with an authorized capital stock of \$500,000 by A. Schmeder, Alex Stewart, and others. The incorporators are not ready to make announcement of their plans.

The Piepkorn-Henning Electric Co., 108 Sycamore Street, Milwaukee, has increased its capital stock from \$15,000 to \$25,000. It manufactures and repairs electrical appliances and equipment and makes industrial installations.

## Cleveland

CLEVELAND, March 31.

The demand for machine tools in small lots continues fairly active. A moderately heavy volume of inquiry is noted for used machinery, the supply of which is plentiful, but it is not obtainable at very low prices. Business is coming from scattered sources, the demand for planers, milling machines and radial drills apparently being more active than other standard lines.

Manufacturers of turret lathes report a fair volume of business for one or two machines. An order for several turret lathes was placed the past week by the Mitchell Motor Car Co., Racine, Wis. No new inquiries of any size have come out recently from automobile manufacturers, although orders for small lots of tools continue to be placed.

A Cleveland builder of turret lathes took an order the past week for 18 machines for shipment to Brussels, Belgium, and received an inquiry from Denmark for 50 machines. American machine tool builders, however, say there is not much chance of taking orders in Denmark, owing to the large amount of machinery built in that country during the war. American manufacturers are finding no market for turret lathes in England, apparently due to second-hand war machinery placed on the British market.

Manufacturers of gas producers report an improvement in the outlook, considerable inquiry now coming from glass manufacturers.

The National Lamp Works, Cleveland, has sent out a long list of machinery which it used for war work and which it is now placing on the market. The Oswego Machine Works, Oswego, N. Y., is also offering for sale a large amount of shop equipment.

The Post Tractor Co., 815 Society for Savings Building, Cleveland, plans to erect a tractor assembling plant 72 x 100 ft. and expects to be in the market for equipment a little later.

The Accurate Machinery Co., Whitney Power Block, Cleveland, will erect a new machine shop, 160 x 180 ft. at East 134th Street and Cort Road.

The Cuyahoga Galvanizing & Mfg. Co., 1280 East Fifty-ninth Street, Cleveland, is having plans prepared for a new plant.

The Maumee Malleable Castings Co., Toledo, Ohio, is reported to be having plans prepared for an addition to cost \$175,000.

The Toledo Cooker Co., Toledo, has purchased a three-story building owned by the Ohio Electric Car Co., and six

acres of land, and plans to double its output of fireless cookers and aluminum ware.

The Bonnot Co., Canton, Ohio, has increased its capital stock from \$500,000 to \$1,000,000 to provide for the expansion in its business. It is engaged in the manufacture of the Holbeck pulverized coal system, clay working machinery and machinery for cement plants and rubber works. No extensions are contemplated at present. L. C. Bonnot is president, Harry W. Harter vice-president, and A. A. Oldham, secretary and treasurer.

The Monarch Rubber Co., Carrolltown, Ohio, has purchased the plant of the Besaw Tire & Rubber Co., Harkville, Ohio. The business will be consolidated at Hartville where a new brick and steel factory, 80 x 200 ft. will be erected.

The Superior Brass Mfg. Co., Mansfield, has increased its capital stock from \$35,000 to \$60,000 to provide for expansion.

The Newark Stamping & Foundry Co., Newark, Ohio, will enlarge its plant by the erection of a two-story building. The increased capacity is required to take care of the house heating furnace manufacturing business of the May-Flebeiger Co., Akron, which it recently took over.

The Sterling Machine & Mfg. Co., Wellington, Ohio, has purchased the Wellington Machine Co. Harry S. Bennett, of the latter company, will retire. The Sterling company will manufacture farm tractors as well as brick machinery.

The Faultless Anchor & Mfg. Co., formerly located at Findlay, Ohio, will establish a plant at Centerburg, Ohio.

The Hollis Tractor Co., Tiffin, Ohio, has placed a contract for an extension to be used for assembling.

The Hydraulic Pressed Steel Co., Cleveland, is inquiring for two No. 78½ Bliss presses.

## Cincinnati

CINCINNATI, March 31.

Replies from machine tool builders in this vicinity as to what percentage of business coming in is foreign range from 8 to 50. Taking the trade as a whole a fair average would be around 30 per cent. This compares very favorably with this time of the year 1914, although a few firms report they are not doing as much foreign business as before the war. The embargoes imposed by France and Great Britain have not yet seriously affected business, but some apprehension as to the future is in evidence. It is the general opinion that strenuous efforts should be made now through the Department of Commerce and leading Senators and Congressmen to have a thorough investigation and take some steps to relieve the situation. More than one firm that corresponds with French representatives emphasizes that because of the American embargo on French wines, it is generally thought in France that the French Government has a right to impose an embargo on any imports from America. So far British restrictions on imports of machine tools have not seriously inconvenienced exporters, as old-established firms in England have no trouble in obtaining import permits.

The ocean freight rate question is becoming more of a vexing problem. A number of inquiries are being received from Spain, but rates are so high that a heavy machine has to be sold there at almost a prohibitive price. Freight rates to Japan and China are also very much higher than from European ports. It is also impossible to obtain through bills of lading to Japanese and Chinese ports, which is causing considerable inconvenience. While the same situation exists concerning European shipments, forwarding agents in Atlantic ports have been able to handle shipments with a minimum of trouble to the manufacturers.

The domestic inquiry for machine tools is largely confined to automobile and tractor manufacturers. Late purchases from these two industries have been somewhat light and are confined mostly to single tools.

The Southern Ohio Iron Works Co., Cincinnati, will erect an addition to its plant on Fredonia Avenue, estimated to cost \$25,000.

Architect G. W. Drach, Cincinnati, is preparing plans for a three-story automobile plant for the Dayton Buick Co., Dayton, Ohio.

The Ignition Plug Co., Dayton, Ohio, has increased its capital stock from \$15,000 to \$50,000, and will increase the capacity of its plant at an early date.

The Columbus Plow Mfg. Co., Columbus, Ohio, has been incorporated with \$25,000 capital stock by B. F. Smith, and others. Nothing has been given out as to manufacturing plans.

The Ironton Portland Cement Co., Ironton, Ohio, has increased its capital stock from \$400,000 to \$650,000 to finance a potash recovery plant now under construction. The company will later install a leaching plant to extract potash from cement dust. A. C. Steece is president.

The Martin Mfg. Co., Lancaster, Ohio, maker of automobile accessories, which recently increased its capital stock from \$75,000 to \$200,000, has acquired the plant of the F. E. Wilson Mfg. Co., which it will operate. J. W. Martin is president.

The Troy Carriage Sunshade Co., Troy, Ohio, has had plans prepared for an addition to its machine shop.

The Hurton Engineering & Machinery Co., Columbus, Ohio, has increased its capital stock from \$150,000 to \$500,000.

Edmund Dickey, Lancaster, Ohio, heads a new company that will manufacture dry batteries.

The Columbus Wood Turning Co., Columbus, Ind., recently organized, has commenced work on a plant for the manufacture of tool handles.

The City Council, Nashville, Tenn., is planning for the installation of new boilers and auxiliary operating equipment at the city electric power plant to cost about \$60,000. It is proposed to issue bonds.

The William J. Oliver Mfg. Co., Knoxville, Tenn., has completed its Government contracts for shells and has perfected plans for the resumption of its regular line of agricultural implements and other specialties. It plans to develop the production of tractors for agricultural service, the machines averaging about 6500 lb. in weight. It is said that new machinery will be installed at the plant for this feature.

The Herff Motor Co., Memphis, Tenn., has increased its capital from \$50,000 to \$100,000.

## Indianapolis

INDIANAPOLIS, March 31.

The Gueutal Spring Service Co., Indianapolis, has been incorporated with \$25,000 capital stock to manufacture automobile springs. The directors are Amile H. Gueutal, Charles Beaska and Eathel Bowen.

The Artificial Ice Co., South Bend, Ind., has increased its capital stock from \$100,000 to \$125,000.

The Reliable Machine Co., Anderson, Ind., has increased its capital stock from \$10,000 to \$25,000.

The Bloomington Reduction Co., Bloomington, Ind., has been incorporated with \$25,000 capital stock to establish a reduction plant. The directors are Benjamin M. Goodman, Israel W. Rukin and John A. Hall.

The Ashley-Dill Burial Case Co., Pierceton, Ind., has been incorporated with \$20,000 capital stock to manufacture burial cases and furniture. The directors are Philo A. Ashley, Guy D. Dill and Lester O. Dill.

The Reversible Motor Plow Co. has been incorporated at Indianapolis with \$100,000 capital stock to manufacture agricultural implements. The directors are Otto, Ernest, and Rudolph Hecht.

P. R. Simmons, vice-president and manager of the Simmons Mfg. Co., Huntington, Ind., manufacturer of paper utensils, has secured a patent on a new metal automobile wheel and plans the organization of a company and establishment of a local plant to manufacture the specialty.

The Anthony Signal Device Co., Indianapolis, has been incorporated with a capital of \$30,000 by Joseph G. James H. and Arthur Anthony to manufacture railroad signal equipment.

Robert C. and J. B. Graham, connected with Graham Brothers, Inc., Evansville, Ind., manufacturer of glass products, have perfected plans for the establishment of a local plant for the manufacture of farm tractors. A company is now being formed with capital of \$1,000,000, and in addition to the Evansville works it is proposed to construct a branch plant at Logansport. Benjamin Bosse, president Globe-Bosse-World Furniture Co., Evansville, is also interested in the new company.

The Indiana Cord Tire Co., South Bend, Ind., has been incorporated with a capital of \$100,000 by Ralph W. Thomas, Alfred A. and H. Peterson to manufacture automobile tires.

The Mutual Truck Co., Sullivan, Ind., is taking bids for the erection of a one-story plant, 100 x 200 ft. Frank McCas is secretary.

## St. Louis

ST. LOUIS, March 31.

The Busch-Sulzer Brothers Diesel Engine Co., St. Louis, will erect a foundry to make its own castings and is receiving bids for construction and equipment, including two 25-ton cranes.

The King & Johnson Mining Co., of Montana, will equip a coal tippie at Clarksville, Ark., costing with allied machinery about \$150,000.



The Nettleton Gin & Milling Co., Nettleton, Ark., A. J. Glenn president, will establish a cotton gin, and is receiving bids for oil engine, cotton ginning equipment, etc.

The West Monroe Cotton Compress & Warehouse Co., Monroe, La., capital \$50,000, is in the market for compressing machinery.

The Missouri Southeastern Utilities Co., Blytheville, Ark., will equip a power plant to supply eight adjoining cities with electric light and power. The mayor of Blytheville should be addressed.

The Town Council, Paragould, Ark., will equip an electric light and power plant to cost about \$100,000.

The Otis Elevator Co., St. Louis, will increase the capacity of its shops at 2301 Locust Street, installing about \$15,000 worth of equipment.

The Great Southern Producing & Refining Co., W. H. Hingate secretary, Hume Mansur Building, Indianapolis, Ind., will equip an oil refinery at Shreveport, La., to cost about \$50,000. The daily capacity will be about 12,000 bbl.

The Interstate Refining Co., Buckburnett, Okla., will equip a 1500 bbl. refinery and an oil pipe line of 4000 bbl. daily capacity. James A. Jones is president.

The Southwestern Light & Power Transport Co., Commerce Building, Miami, Okla., W. T. Croslen, chief engineer, will equip a hydroelectric plant in Grand River of 10,000 to 15,000 hp. One 10,000 hp. steam turbine will be needed within 60 days. An auxiliary unit of 10,000 hp. will be equipped at Miami.

The Arkansas Truck & Body Co., J. L. Clarkson manager, Texarkana, Ark., will equip a plant for the manufacture of automotive trucks and bodies and will install electric power machinery.

The W. E. Bible Storage Battery Mfg. Co., El Reno, Okla., will equip a plant for the manufacture of storage batteries requiring about \$50,000 worth of machinery, etc.

The Arkansas Valley Tractor Co. has acquired a site at Newkirk, Okla., and will erect a plant for the manufacture of tractors.

The Consumers' Automobiles Supply Co., Newkirk, Okla., capital \$250,000, will equip a plant for the manufacture of automobile supplies and machinery. J. S. Hayes and others interested.

The town of Wiggins, Miss., is in the market for about \$12,000 worth of waterworks plant equipment.

The City Council, Cardin, Okla., will expend \$50,000 on waterworks and electric light plant equipment.

The Harlan & Harlan Machine Works, Kansas City, Mo., is in the market for 100 ton refrigerating machinery and 20 to 30 ton ice making machinery.

The Rapides Auto Co., Alexandria, La., has been incorporated with a capital of \$75,000 by Thomas L. Owen and John C. Beuhler, to manufacture auto parts and specialties.

## California

LOS ANGELES, March 25.

Ayers & Bennett, Los Angeles, have arranged for the construction of new works at Oildale, Cal., for the manufacture of tractors, parts, etc. The initial plant is estimated to cost \$20,000.

P. Freitag, 1535 East Sixteenth Street, Los Angeles, has filed plans for the erection of a one-story foundry addition, 35 x 68 ft.

The Hollywood Machine & Automobile Repair Shop, Hollywood, near Los Angeles, has been organized to operate works at 6418 Sunset Boulevard. F. Attula, 2433 South Grand Avenue, heads the company.

The Sutter Butte Canal Co., Gridley, Cal., is planning for the construction of a new electrically operated pumping plant on the Feather River.

The Superior Tires Corporation, Los Angeles, has been incorporated with a capital of \$25,000 by James J. Grant, M. L. Haines and S. S. Abrams, the latter of 2135 Sacramento Street, San Francisco, to manufacture automobile tires.

The Cass Mfg. Co., 412 South Broadway, Los Angeles, has filed notice of organization to manufacture stoves, heaters, etc. Bruce H. Cass, 1211 West Twenty-eighth Street, heads the company.

The Water Department, Long Beach, Cal., is planning for the installation of two new pumps, with auxiliary operating equipment, at the municipal water works.

James Smith, 1009 Stanford Avenue, Los Angeles, has filed plans for the construction of a new brick foundry, 84 x 50 ft.

The Board of Trustees, Calexico, Cal., is considering the

establishment of a municipal electric lighting plant in connection with a city owned gas works.

The Hunt Tire Tool Co., 316½ Broadway, Los Angeles, has filed notice of organization, to manufacture tools. Oscar C. Hunt and George Phiffer head the company.

The National Show Case & Fixture Co., Los Angeles, has been incorporated with a capital of \$20,000 by Fred F. Bakes, Henry F. Youngberg and T. G. Dalton, to manufacture metal display fixtures, showcases, etc.

The Union Oil Co., Los Angeles, is said to be planning for the construction of additions to its refining works at Fresno, Cal., to cost about \$200,000.

The Pit River Power Co., Redding, Cal., recently incorporated with a capital of \$2,500,000, is planning for the construction of an electric power plant in this district to furnish power to the Southern Pacific Railroad. The company is understood to be a subsidiary of the railroad.

The Ferrell Brass Foundry, 110-12 East Seventeenth Street, Los Angeles, has been organized to manufacture brass and bronze castings, etc. Charles G. Ferrell, 3933 South Broadway, heads the company.

The Emergency Fleet Corporation, Washington, has recently suspended contracts for the construction of 24 steel vessels at plants at Los Angeles and Long Beach. The Southwestern Shipbuilding Co., San Pedro, Los Angeles, has a contract for 23 ships, 8 of which have been canceled; of the 30 vessels to be constructed by the Los Angeles Shipbuilding & Dry Dock Co., a total of 10 has been annulled. The contract of the Long Beach Shipbuilding Co. for 12 steel vessels has been reduced to six.

### Catalogs Wanted

The Purchasing Agents' Association of Northern California is starting for the benefit of its more than 100 members, representing an annual purchasing power of nearly \$100,000,000, a general catalog file, particularly of machinery, mechanical goods, hardware, iron and steel products, etc. D. B. Gray, 230 California Street, San Francisco, is secretary.

## The Pacific Northwest

SEATTLE, March 25.

Restoration of normal conditions in local shipyards and industrial shops which were closed by the recent strike is progressing satisfactorily and several plants are employing larger forces than before. There seems to be every indication of increasing interest in industrial projects in this section. Scores of inquiries have been received relating to sites, locations and possibilities of financing not only the enlargement of existing establishments, but many new enterprises. A number of important projects which were held up on account of the war are to be revived and work undertaken as soon as possible. Demand for machinery is becoming exceedingly active, especially farm equipment. Second-hand machinery is moving well, but the supply is limited. Sawmill and logging machinery is in great demand.

The Mainland Engineering Co., Vancouver, B. C., has plans in preparation for its proposed new plant to be built on Coal Harbor, at a cost of \$65,000 to \$70,000. The buildings will be of heavy frame construction and will include a two-story pattern shop, 50 x 60 ft.; boiler and blacksmith shop, 54 x 125 ft.; foundry, 60 x 100 ft.; machine shop, 50 x 100 ft.; marine ways, 50 ft. wide and 250 ft. long, and office building.

The Morrison Steel & Wire Nail Co., Vancouver, B. C., has leased a site on Industrial Island, on which will be built its new wire products mill to replace the plant destroyed by fire. Plans include a main factory, 100 x 208 ft.; cleaning room, 52 x 56 ft.; machine shop, tool room and stock rooms. New machinery will be installed.

The grain elevator of the Treasure State Grain Co., Red Lodge, Mont., was completely destroyed by a recent fire, with a loss of \$60,000. J. T. Clapper, manager, states that a new plant will be built on a larger scale.

The plant of the Coats Shingle Mill Co., Raymond, Wash., was recently completely destroyed by fire with a loss of \$75,000 to \$100,000. It is reported it will be rebuilt.

The Northwest Steel Co., Portland, is making plans to build ships under a co-operative industrial basis, participated in by the 3000 employees. It has built 20 steel ships for the Government. J. R. Bowles is president.

P. A. Costello, 312 Second Avenue South, Seattle, plans the manufacture of a patent smokeless stoker.

The Western Construction Co., 205 Seaboard Building, Seattle, plans the construction of a one-story frame factory, 60 x 110 ft., at 3400 Fairmount Avenue, for the manufacture of novelties.

It is announced that the shipbuilding plant of the Foundation Co., Tacoma, is to be dismantled and the machinery and equipment shipped to its plant at Victoria, B. C.

The Peninsula Lumber Co., Portland, has increased its capitalization from \$1,000,000 to \$1,500,000, to permit of further development.

The Astoria Pulp & Paper Co., Astoria, Ore., will construct a two-story addition to its plant, 36 x 140 ft., at a cost of \$25,000.

The Labor Spring Co., Seattle, has purchased a site on Pike Street on which a small plant will be erected for the manufacture of a patented spring.

The Liberty Sheet Metal Works, Tacoma, has been incorporated by Albert Kastner, et al., for \$2,000.

The Vale Machine & Welding Works, Vale, Ore., has been organized by Harry E. Spieth and will start operation as soon as the machinery, which has been purchased, is assembled.

## Texas

AUSTIN, March 29.

Never in the history of the oil industry in this section has there been such a demand for oil well equipment, pumping machinery, etc., as exists at this time.

George V. Taylor, Cushing, Okla., and H. A. Stroud, Electra, have purchased a tract of land at Ranger as a site for a 2000 bbl. refinery which they will build.

The Southern Drydock & Shipbuilding Co., Orange, plans to increase its capital stock to \$1,000,000 and to enlarge its yards.

The Texas Leasing & Development Co., Wichita Falls, plans to build an oil refinery at Longview, with a daily capacity of 10,000 bbl.

The Alto Mill & Lumber Co., Texarkana, has been incorporated with a capital stock of \$50,000 and will build a lumber mill. R. C. Cowan is a stockholder.

W. C. Steety and associates have purchased a tract of 40 acres near De Leon upon which they will build an oil refinery of 3000 bbl. daily capacity.

## Canada

TORONTO, March 31.

The Montreal Portland Cement Co., Ltd., Montreal, has been incorporated, with a capital stock of \$2,000,000, by Robert Houston, James G. Cartwright, James B. Taylor, and others. A site has been purchased on Montreal Island, where a plant to have a daily capacity of 5000 bbl. will be erected immediately.

M. J. O'Brien, Ltd., Renfrew, Ont., has for sale the plant and equipment of the O'Brien Munitions, Ltd., and Energit Explosives, Renfrew, consisting of pipe and fittings, electrical equipment, auxiliary steam plants, boilers, tanks, pumps, compressors, fans, hydraulic equipment conveyors, mixers, refrigerating apparatus and fully equipped machine, carpenter, tinsmith and blacksmith shops, etc.; also miscellaneous machine tools, etc.

The Western Salt Co., Courtright, Ont., is in the market for a 30-hp. 125-volt, direct-current motor.

The Aero Cushion Inner Tire Co., Wingham, Ont., will build a factory to cost about \$60,000. L. Kennedy is secretary.

The Dominion Electric Switch Box Co., 10 Croft Street, Toronto, will build a three-story mill and brick factory to cost \$15,000.

The Canada Marble Co., 18 Toronto Street, Toronto, proposes to expend \$500,000 for machinery and equipment to develop its quarries at Bancroft, Ont. Mr. Mathews, Toronto, is manager.

The H. H. Robertson Co., Sarnia, Ont., which is establishing a plant for the manufacture of steel goods, roofing material, etc., will spend \$30,000 on machinery and equipment.

The Canadian Collapsible Rim Co. of Canada, Ltd., Windsor, Ont., has been incorporated, with a capital stock of \$500,000, by John A. Campbell, Sydney S. Anderson, Windsor, Ont.; William H. Duncan and Eldon B. Edmunds, Toledo, Ohio, and others. The company will establish a plant at Windsor, where it will manufacture automobile parts, accessories, engines, motors, etc.

The Renfrew Electric Products, Ltd., Renfrew, Ont., has been incorporated, with a capital stock of \$500,000, by Stephen H. Murphy, John A. Jamieson, Thomas A. Low, and others, to take over the business and plant now operated by the Renfrew Electric Mfg. Co.

The McLaughlin Motor Car Co., Ltd., Oshawa, Ont., has been incorporated, with a capital stock of \$10,000, by William S. Morlock, 85 Bay Street; Sydney E. Wedd, Roy B.

Whitehead, and others, of Toronto, to manufacture automobiles, trucks, machinery, etc.

The National Safety Oil Burner Co., Ltd., Toronto, has been incorporated, with a capital stock of \$40,000, by William W. Scott, Morley C. Pritchard, 1661 Dufferin Street; Andrew B. Law, 12 Appleton Avenue, and others, to take over the business now carried on by the National Safety Burner Co., Toronto.

The Grimsby Steel Furniture Co., Ltd., Grimsby, Ont., has been incorporated, with a capital stock of \$60,000 by William J. McCoy, Room 403, 69 Yonge Street; Isaac L. Leo, 76 Rowanwood Avenue; Harold R. Hollingshead and others of Toronto, to manufacture steel furniture, specialties, etc.

The Anglo Canadian Metals, Ltd., Toronto, has been incorporated, with a capital stock of \$40,000, by John A. MacIntosh, 70 Forest Hill Road; George R. Wallace, 36 Glenwood Avenue; Frances Kinsella, and others, to manufacture metal products, machinery, etc.

The A. M. Castle Engineering Co., Ltd., Toronto, has been incorporated, with a capital stock of \$275,000, by Walter G. Hammond, Room 11, 24 King Street, West; Jacob H. Greenberg, John D. Bradford, and others, to manufacture gas, steam and electric engines, machinery, etc.

Maldaver & Co., Ltd., Toronto, has been incorporated with a capital stock of \$100,000, by Gideon Grant, Andrew Dods, Bank of Hamilton Building; Edwin Smity and others to deal in iron and steel junk, and to manufacture it into commodities, etc.

Hardinge Brothers of Canada, Ltd., Toronto, has been incorporated, with a capital stock of \$40,000, by Thomas A. Rendle, Chicago; John R. Newson, Brighton, Ont.; John F. MacGowan, 68 Bartlett Avenue, Toronto, and others to manufacture time detectors, recorders, machinery, etc.

The Mitchell-Holland Co., Ltd., Montreal, has been incorporated, with a capital stock of \$100,000, by Walter R. L. Shanks, Francis G. Bush, George R. Brennan and others to manufacture furniture, electric fixtures, etc.

The Pressed Metals Co. of Canada, Ltd., 112 Adelaide Street East, Toronto, is contemplating considerable expansion, which includes the erection of a plant in Detroit, Mich., with a capital stock of \$2,000,000. The company was organized in 1917, and manufactured brass castings for shells for the Imperial Munitions Board. The directors are C. E. Calvert, president; J. W. Leighton and J. R. L. Starr, vice-president; R. L. Nuspau, and S. Goldsmith.

Williams & Wilson, Ltd., machinery and supply dealer, has removed its offices and warehouse from 320 St. James Street, Montreal, to 84 Inspector Street, where it has erected a four-story reinforced-concrete building with about 46,000 sq. ft. warehouse space.

The Paramount Phonograph & Record Co. of Canada, Ltd., Montreal, has been incorporated with a capital stock of \$300,000 by Maxwell Goldstein, John A. Angel, James B. Taylor and others, to manufacture phonographs, talking machines, etc.

The John Morrow Screw Co., Ltd., Ingersoll, Ont., is making extensions to its plant which will give greatly enlarged production. When completed and the machinery installed about 600 automatics will be in operation.

The Automatic Window Screen Co., Seattle, capitalized at \$100,000, is constructing a factory at 600 Ewing Street for the manufacture of a patented window screen. P. J. Bradley is president.

Plans are under way for the construction of a paper and pulp mill at Aberdeen, Wash., to cost \$100,000 and to have capacity of 10 tons. The Grays Harbor Realty Board is back of the project.

The Chevrolet Motor Co. of Canada, Ltd., Oshawa, Ont., has been incorporated with a capital stock of \$10,000 by William S. Morlock, 85 Bay Street; Sydney E. Wedd, Roy B. Whitehead and others of Toronto, to manufacture automobiles, motor trucks, engines, motors, etc.

The Reedsport Iron Works, Reedsport, Ore., is contemplating the erection of a foundry in connection with its plant.

Fred A. Ballin has resigned as president and director of the Pacific Marine Iron Works, Portland. John L. Jennings formerly manager, has been elected president. Joseph Supple, vice-president, and Edward G. Gordon, of the machinery firm of Gordon & Finbeiner, treasurer. The company will continue to manufacture the engines of the Supple-Ballin type and those of the Fred A. Ballin type under way at the Vancouver yard of the G. M. Standifer Construction Corporation.

James Birral, Fanshaw, Ont., is in the market for an air compressor, tank capacity of about 50 to 100.

## NEW TRADE PUBLICATIONS

**Metal Saws.**—Pittsburgh Saw & Mfg. Co., Pittsburgh. Catalog 10. Lists, illustrates and describes the company's line of circular metal-cutting saws, including milling saws, high speed saws, metal-slitting saws, friction disks, circular saws for slate, circular knives, pipe cutters, cigarette and sugar cutters, and inserted tooth saws. A number of pages are devoted to milling cutters, angular cutters, cutters for spiral mills, thread milling cutters and rotary shear blades. Useful tables giving weights of steel are included.

**Graphite Products.**—Joseph Dixon Crucible Co., Jersey City. Pocket catalog. Lists and describes the company's line of lubricants, paints and pencils. The descriptions are brief but furnish a good idea of the variety of products manufactured.

**Steam Hammers.**—Erie Foundry Co., Erie, Pa. Catalog F size 8½ x 11 in., 43 pages. Describes steam hammers, trimming presses, sheet galvanizing and shearing machinery. Each machine is described in detail and is illustrated. Instructions for erecting, operating and adjusting single and double frame steam hammers and steam drop hammers are given. A number of views show steam hammer installations at various automobile and other plants.

**Wiring Devices.**—Cutler-Hammer Mfg. Co., Milwaukee, Wis. Catalog, size 8 x 10½ in., 54 pages. Devoted to the company's output of wiring devices and push button specialties. The illustrations and descriptions include push sockets; candelabra switches; canopy, door, snap, pull and various other types of switches; plugs and receptacles, etc. A line of automobile lighting switches with diagrams of connections for automobile lighting are included.

**Turret Lathes.**—Gisholt Machine Co., Madison, Wis. Catalog TLA-1, 7½ x 9½ in., 102 pages. The first 13 pages show close-up views of lathes at work on various parts. Three pages of drawings show parts finished with standard chucking tools, with the time required to perform the operations given. Eighteen pages give additional examples of parts finished on the company's lathes, with the time of production for each piece. Eight illustrations show the machine in customers' shops. The remaining pages are devoted largely to a general description with half-tones of the lathe, tools and accessories.

**Oil Furnace.**—Ingersoll-Rand Co., 11 Broadway, New York. Form 9120. A detailed description with one illustration of the company's No. 3 Leyner oil furnace for heating drill steel. The furnace has a rated capacity of 1000 to 1500 pieces per 8-hr. shift.

**Pressed Steel Bodies and Parts.**—Mansfield Steel Corporation, successors to J. E. Bolles Iron & Wire Works, Detroit. Catalog. Shows views of the interior of the company's plant with equipment for making pressed steel bodies, truck and tractor frames, radiator guards and pressed steel parts. A number of the company's products are also illustrated and briefly described.

**Second-hand Rail and Track Supplies.**—Walter A. Zehner Supply Co., 325 Locust Street, St. Louis. Lists a stock of second-hand rails, cars and trucks, bridges, generator sets, pipe, and track spikes.

**Welding and Cutting Apparatus.**—Air Reduction Sales Co., 120 Broadway, New York. Two folders. One shows the benefit derived from the use of the company's products and methods for the purpose of building up worn frogs, the other, for repairing damaged locomotive cylinders. Both folders are illustrated.

**Shredders.**—Jeffrey Mfg. Co., Columbus, Ohio. Catalog 243. A complete description of a swing hammer type shredder for the shredding of fibrous materials requiring a uniform reduction, such as chips, bark, beans, nuts and seeds for extracting works; bark for tanneries; pine chips for turpentine works; pulp wood-chips for paper mills. Interesting installation views together with typical arrangements of the company's elevating and conveying equipments used in connection with the shredders for handling the various materials, are included.

**Gas Compressors.**—Norwalk Iron Works Co., South Norwalk, Conn. Bulletin 1. Concerned with a line of compressors for oxygen and hydrogen. Views and descriptions of different types of three-stage belt-driven oxygen or hydrogen compressors, 1800 to 2000 lb. and a steam driven compressor, are given.

**Roller Bearings.**—Hyatt Roller Bearing Co., Metropolitan Tower, New York. Bulletin 420. Gives designs for the application of the company's roller bearings to machine tools of various kinds. The bulletin also contains a complete load

and speed table giving the safe load for roller bearings of all dimensions for various classes of machine tool service.

**Twist Drills and Reamers.**—Buckeye Twist Drill Co., Alliance, Ohio. Catalog 6. Lists with prices, a line of taper shank, straight shank, wire gage and other types of twist drills in carbon and high speed steel, oil tube drills, steel sockets, arbors, countersinks, various types of reamers, mandrels and special tools. Included in the catalog are drill lists for taps, decimal equivalents of regular sizes, cutting speeds and various other tables.

**Magnesium.**—Shawinigan Electro-Metals Co., Montreal, Que., United States sales office 932 Leader-News Building, Cleveland. Pamphlet. Treats of magnesium and contains interesting data obtained from the company's own laboratory work, from technical literature and from other sources. Pages are devoted to foundry practice, under which heading the uses of the metal as a dioxidizing agent in melting, particularly in non-ferrous foundry work, and instructions to users, are compiled. A chapter is devoted to the use of magnesium as a component in alloys. Physical and chemical properties are listed in separate chapters for the benefit of those interested in the scientific application of magnesium to other branches of industry.

**Moving Structures.**—John Eichleay, Jr., Co., South Twentieth and Wharton Streets, Pittsburgh. Booklet. Photographs with data, of work accomplished in moving various structures, including buildings, bridges, car dumper, boats, oil tank, stand pipe, brick stack, etc.

**Feed Water Filter and Grease Extractor.**—Griscorn-Russell Co., 90 West Street, New York. Bulletin 609. Describes a multiscreen feed water filter and grease extractor for use with condensed steam from engine cylinders, heating systems, etc., and for the removal of mud or sand from lake or river water used for boiler feed. The device is made in various sizes.

**Drilling Machines.**—Defiance Machine Works, Defiance, Ohio. Pamphlet. Two illustrations with descriptions of the company's 24-in. heavy service drilling machines, one with plain table, the other with a compound table.

**Electric Butt Welding.**—Ready Tool Co., Bridgeport, Conn. Pamphlet. Examples to show economies effected in high speed tools by welding high speed steel to carbon shanks.

**Checking Thermocouple Pyrometers.**—Leeds & Northrup Co., 4301 Stenton Avenue, Philadelphia. Bulletin 867-B. Discusses the importance of maintaining standards and of checking in pyrometry, and points out sources of error and the remedies for troubles in thermocouples, millivoltmeters, cold junctions and potentiometers. It outlines a commercial checking laboratory, including a special checking furnace, precision potentiometers and standardized thermocouples.

**Ball Thrust Bearings.**—Rochester Ball Bearing Co., Rochester, N. Y. Catalog 12. Specifications with illustrations of the company's line of ball thrust bearings including types with round groove and flange, seat; round groove, self aligning; flat face, flat seat; round groove, flat seat, outer sleeve type; round groove, self aligning for automobile steering knuckle.

**Electric Valve Grinder.**—Black & Decker Mfg. Co., Baltimore, Folder. Concerned with a motor driven valve grinder with a pistol grip and trigger switch. This tool was illustrated and described in THE IRON AGE, issue March 13.

**Pipe Threading Machinery.**—Landis Machine Co., Waynesboro, Pa. Catalog 25. Detailed descriptions with illustrations of stationary pipe die heads, pipe threading and cutting machines, rotary pipe and nipple threading die heads, pipe and nipple threading machines and a chaser grinder.

**Sales Records.**—Tuttle Corporation, South Bend, Ind. Concerned with charts for graphically recording various department activities. The records are surfaced with pyralin and are washable.

**Industrial Cars and Equipment.**—Eiehl Iron Works, Reading, Pa. Catalog 8. Numerous illustrations with descriptions of various types of industrial dump cars and a line of factory cars including yard, platform and push cars, trucks for foundry and warehouse work, charging cars, fire wagons, lime cars, core oven, skip and special cars; also various tubs and buckets, and a variety of equipment for contractors.

**Adjustable Wall Radiator Bracket.**—General Fire Extinguisher Co., Providence, R. I. Bulletin 13. Concerned with an adjustable wall radiator bracket, made to accommodate any make or assemblage of radiator.

**Metal Sanitary and Fireproof Equipment.**—Manufacturing Equipment and Engineering Co., 136 Federal Street, Boston. Five catalogs. The catalogs are devoted to an extensive line of metal lockers, metal stools and chairs, racks, sanitary drinking fountains, and miscellaneous equipment, respectively, intended for factories, foundries, gymnasiums, public buildings, department stores, offices, hospitals, etc.



# Current Metal Prices

On Small Lots, from Merchants' Stocks, New York City

The quotations given below are for small lots, as sold from stores in New York City by merchants carrying stocks.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

## Iron and Soft Steel Bars and Shapes

	Per lb.
<b>Bars:</b>	
Refined iron, base price	3.37c
Burden's H. B. & S. bar iron, base price	6.30c
Burden's best bar iron, base price	6.50c
Swedish bars, base price	20.00c
<b>Soft Steel:</b>	
¾ to 1½ in., round and square	3.37c
1 to 6 in. x ¾ to 1 in.	3.37c
1 to 6 in. x ¼ and 5/16	3.47c
Rods—¾ and 11/16	3.42c
Bands—1½ to 6 x 3/16 to No. 8	4.07c
<b>Shapes:</b>	
Beams and channels—3 to 15 in.	3.47c
<b>Angles:</b>	
3 in. x ¼ in. and larger	3.47c
3 in. x 3/16 and ½ in.	3.72c
1½ to 2½ in. x ¼ in.	3.72c
1½ x 2½ in. x 3/16 in. and thicker	3.47c
1 to 1¼ in. x 3/16 in.	3.52c
1 to 1¼ in. x ½ in.	3.57c
¾ x ¾ x ½ in.	3.62c
¾ x ½ in.	3.67c
¾ x ½ in.	4.47c
½ x 3/32 in.	5.17c
<b>Tees:</b>	
1 x ½ in.	3.87c
1½ in. x 1¼ x 3/16 in.	3.77c
1½ to 2½ x ¼ in.	3.57c
1½ to 2½ x 3/16 in.	3.57c
3 in. and larger	3.52c

## Merchant Steel

	Per lb.
Soft steel bars	3.37c
Tire, 1½ x ½ in. and larger	3.37c
Toe calk, ½ x ¾ in. and larger	4.72c
Open-hearth spring steel	7.00c
Standard cast steel, base price	15.00c
Extra cast steel	18.00 to 20.00c
Special cast steel	23.00 to 25.00c

## Tank Plates—Steel

	Per lb.
¼ in. and heavier	3.67c

## Sheets

### Blue Annealed

	Per lb.
No. 8 and 3/16 in.	4.52c
No. 10	4.55c to 4.57c
No. 12	4.60c to 4.62c
No. 14	4.65c to 4.67c
No. 16	4.75c to 4.77c

### Box Annealed—Black

	Soft Steel C. R., One Pass, per lb.	Wood's Refined, per lb.
Nos. 18 to 20	5.30c to 5.50c	
Nos. 22 and 24	5.35c to 5.55c	7.62c
No. 26	5.40c to 5.60c	7.67c
No. 28	5.50c to 5.70c	7.82c
No. 30	5.70c to 5.90c	
No. 28, 36 in. wide, 10c higher.		
Genuine Russia, as per assortment	22½ @ 25c	
Woods Keystone Hammered,		
18-24 gage, 10c.; 26-28 gage, 11c.		

### Galvanized

	Per lb.
No. 14	5.60c to 5.80c
No. 16	5.75c to 5.95c
Nos. 18 and 20	5.90c to 6.15c
Nos. 22 and 24	6.05c to 6.25c
No. 26	6.20c to 6.40c
No. 27	6.35c to 6.55c
No. 28	6.50c to 6.70c
No. 30	7.00c to 7.20c
No. 28, 36 in. wide, 20c. higher.	

### Corrugated Roofing, Galvanized

2½ in. corrugations, 10c. per 100 lb. over flat sheets.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general headings of "Iron and Steel Markets" and "Metal Markets."

## Steel Wire

BASE PRICE\* ON NO. 9 GAGE AND COARSER

Bright basic	5.50c
Annealed soft	5.50c
Galvanized annealed	6.25c
Coppered basic	6.25c
Tinned soft bessemer	7.50c

\*Regular extras for lighter gages.

## Brass Tubes, Rods and Wire, and Copper Tubes

Manufacturers have withdrawn all quotations because of unsettled prices of raw materials and will only name prices to actual buyers.

## Copper Sheets

Sheet copper, hot rolled, 16 oz., 22½c. to 24½c. per lb.  
Cold rolled, 14 oz. and heavier, 1c. per lb. advance over hot rolled.  
Polished, 20 in. wide and under, 1c. per sq. ft. extra over  
20 in. wide, 2c. per sq. ft. extra.  
Planished copper, 1c. per sq. ft. more than polished.  
Tinning, one side, 6c. per sq. ft.

## Tin Plate

	Bright Tin	Grade "A"	Grade "A"	Charcoal	14x20	14x20	Coke—14x20	Primes	Wasters
	Grade "AAA"	Grade "A"	Charcoal	14x20	14x20				
	IC	IX	IXX	IXXX	IXXXX		80 lb.	\$8.30	\$8.00
							90 lb.	8.40	8.10
							100 lb.	8.55	8.20
							IC	8.80	8.50
							IX	10.00	9.70
							IXX	10.95	10.70
							IXXX	11.90	11.60
							IXXXX	12.85	12.60

## Terne Plates

	8-Lb. Coating 14x20
100 lb.	\$8.50
IC	8.60
IX	9.60
Fire door stock	11.50

## Tin

Straits pig	74c to 76c
Bar	85c to 90c
American pig, 99 per cent.	70c to 72c

## Copper

Lake Ingot	18c to 19c
Electrolytic	17c to 18c
Casting	16½c to 17½c

## Spelter and Sheet Zinc

Western spelter	9c to 10c
Sheet zinc, No. 9 base, casks	12c; open 10c

## Lead and Solder\*

American pig lead	6½c to 7c
Bar lead	7½c to 8½c
Solder ½ & ½ guaranteed	4c
No. 1 solder	4c
Refined solder	4c

\*Prices of solder indicated by private brand vary according to composition.

## Babbitt Metal

Best grade, per lb.	90c
Commercial grade, per lb.	85c

## Antimony

Asiatic	10c to 11c
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## Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.	37c to 38c
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## Old Metals

There is no change in the general situation. Business is very quiet. Dealers' buying prices are nominally as follows:

Copper, heavy and crucible	12.00c
Copper, heavy and wire	12.00c
Copper, light and bottoms	10.50c
Brass, heavy	7.50c
Brass, light	6.00c
Heavy machine composition	21.50c
No. 1 yellow rod brass turnings	18.00c
No. 1 red brass or composition turnings	18.00c
Lead, heavy	4.00c
Lead, tea	3.00c
Zinc	2.00c

[illegible]